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# Ophthalmology



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**Version 5.3**

Corrected, Updated, Lighter

PLAB 1 Keys is for **PLAB-1** and **UKMLA-AKT** (Based on the New MLA Content-Map)

With the Most Recent Recalls and the UK Guidelines

**ATTENTION:** This file will be updated online on our website frequently!

(example: **Version 2.6** is more recent than **Version 2.5**, and so on)

Key  
1

## Anterior uveitis = Iritis = Iridocyclitis

Anterior uveitis is one of the important differentials of a red eye. It is also referred to as **iritis**. Anterior uveitis describes inflammation of the anterior portion of the uvea “iris and ciliary body”.

### Features

- ♦ **Acute onset**, **progressive** (over a few hours/ days)
- ♦ Ocular discomfort & pain (may increase with use)

- ◆ **Pupil may be irregular, distorted, constricted, sluggish to react.**
- ◆ **Photophobia** (often intense)
- ◆ **Blurred** vision
- ◆ **Red eye**
- ◆ **Lacrimation** (watering)
- ◆ Ciliary flush
- ◆ Hypopyon; describes **pus and inflammatory cells (flares and cells) in the anterior chamber**, often resulting in a visible fluid level.
- ◆ Visual acuity initially normal → later, impaired

### **Associated conditions “Often given as a hint to pick iritis”**

Ankylosing spondylitis ■ Reactive arthritis ■ ulcerative colitis, Crohn’s disease

**Note**, **Rheumatoid arthritis** is more associated with **scleritis** than uveitis.

### **Management**

✓ Urgent review by ophthalmology

✓ Cycloplegics (eg, **Cyclopentolate**) → it dilates the pupil which prevents adhesion between lens and iris and helps to relieve pain and photophobia) eg, atropine, cyclopentolate.

✓ **Prednisolone** eye drops → reduce inflammation.

	<b>Acute Iritis (Anterior Uveitis)</b>	<b>Acute Angle Closure Glaucoma (AACG)</b>
<b>Photophobia</b>	<b>Marked</b>	Mild
<b>Anterior chamber</b>	Cells and Flares "Hypopyon"	✓ <u>Shallow</u> anterior chamber ✓ Hard globe on palpation
<b>Pupil</b>	<b>Irregular</b> "distorted", constricted, sluggish to react	<b>Fixed, non-reacting, semi- dilated, ovoid.</b> Pupil could also be abnormal in shape.
<b>Intra-ocular pressure (IOP)</b>	Variable	High
<b>Cornea</b>	Keratic precipitates	Oedema "Hazy, Dull, Cloudy". Coloured <b>haloes</b> .
<b>Associations</b>	Ankylosing Spondylitis Reactive Arthritis IBD (UC, CD).	✓ Systemic association eg, <b>Headache, Nausea</b> and <b>Vomiting</b> .  ✓ Hx of being in a dark room (movie theatre, ophthalmologist clinic).  ✓ Hx of tropicamide drops use (mydriatic agent).
<b>Rx</b>	♦ <u>Cyclopentolate</u> ,	♦ <u>Pilocarpine</u> drops ✓

♦ Atropine,  
♦ Prednisolone

♦ Timolol maleate drops ✓  
♦ IV Acetazolamide  
♦ beta-blockers, steroids, analgesics, antiemetics  
♦ Peripheral iridotomy (PI)

### Example 1,

A 50 YO man presents with **painful, red, photophobic** eye with slightly **blurred vision** and **watering** for 2 days. On slit lamp examination → **cells and flare in the anterior chamber**. The pupil is **sluggish to react**.

→ **Acute iritis** = (**Anterior uveitis**) = (**Iridocyclitis**) “Any is correct”

### Example 2,

A 36 YO man presents with **painful, red, photophobic** eye for 24-hours. He also complains of **blurred vision**. The pupil is **Irregular/ Distorted in shape**. He has Hx of **cervical spondylitis and back pain and stiffness** for which he is on NSAIDs for the last 3 years.

• Likely Dx → → **Acute iritis** = (**Anterior uveitis**) = (**Iridocyclitis**) “any is correct”.

• The affected ocular part → **iris**

**Example 3,**

**Painful red eye of 4 days. Sclera and Corneal junction are red with tearing. Pupil is irregular in shape. Fluorescein staining is normal. Diagnosis?**

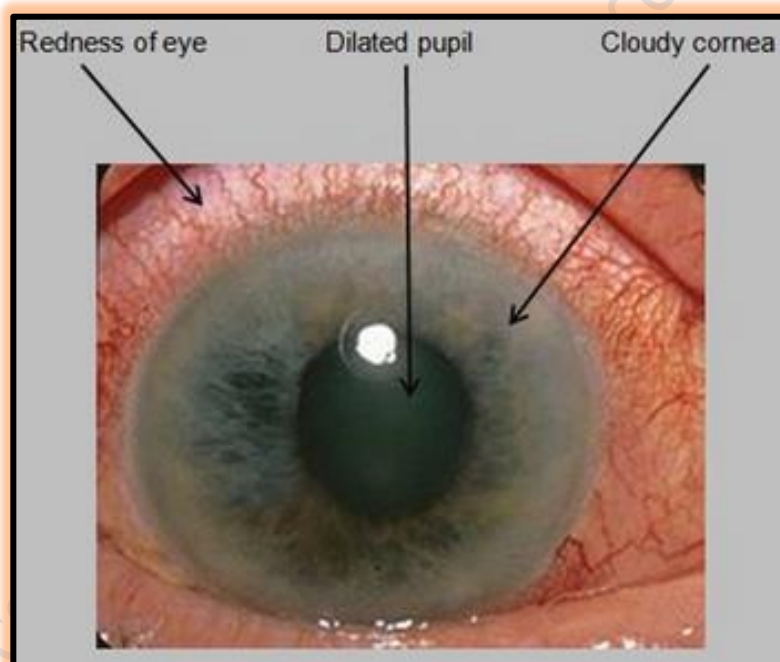
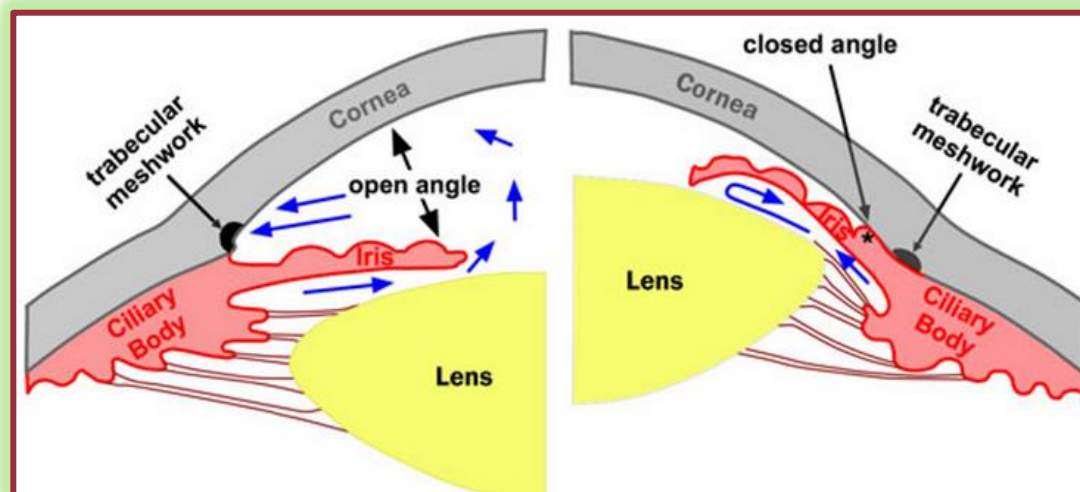
- a. Corneal ulcer
- b. Acute conjunctivitis
- c. **Anterior Uveitis**
- D. Keratitis

**Key  
2**

**Acute Angle Closure Glaucoma  
= Narrow Angle Glaucoma**

**Mechanism of Acute Angle-Closure Glaucoma**

- The root of the iris occludes the anterior chamber angle and prevents the passage of the aqueous humour from the posterior to the anterior chamber.
- Aqueous cannot reach the outflow pathway and collects in the eyeball.
- The result is a rapid elevation of intraocular pressure (IOP).
- It is an ophthalmic emergency and may cause permanent visual loss unless managed immediately and properly.



• Impaired aqueous outflow → ↑ Intra-Ocular Pressure (↑ IOP).

• **RFs** → Hypermetropia ■ Pupillary dilatation.

- **Features:**

- ◆ **Acute severely painful and red eye.**
- ◆ **Headache**, Blurred vision, Ocular pain.
- ◆ Seeing **coloured “Halos”** around lights “this feature is in cataract as well”.
- ◆ The **pupil is semi-dilated**, non-reacting (ie, fixed), might look **ovoid** (**abnormal** in shape).
- ◆ ↑ pupil dilatation (Mydriasis) such as when **watching TV in a dark room** → **Worsens Symptoms.**
- ◆ OE → **Hard globe** | **Cloudy- dull- hazy cornea** “Corneal Oedema” | **Shallow anterior chamber.**
- ◆ Systemic → Nausea, vomiting, headache.

▣ **Initial Investigation** → **Measure intra-ocular pressure using tonometry.**

- ▣ **Medical management**

The management of AACG is an **emergency** and should prompt **urgent referral to an ophthalmologist.**

Emergency medical treatment is required to lower the IOP with more definitive surgical treatment given once the acute attack has settled.

- ✓ To reduce aqueous secretions → **IV Acetazolamide** (systemic).
- ✓ To induce pupillary constriction → topical **Pilocarpine**.
- ✓ A **β-blocker** (eg, **Timolol maleate eye drops**), (↓ aqueous production) since timolol is a β-blocker, cautioned in asthmatic patients.
- ✓ Others: **Steroids eye drops** (eg, prednisolone 15 every 15 minute for 1 hour, then hourly), **analgesics**, anti-emetics
- ✓ After stabilising the patient, **urgently refer to an ophthalmologist**.

### ▣ **Surgical management**

- ✓ Laser **peripheral iridotomy** (PI): “Preferred”.
- ✓ Surgical iridectomy.

### **Example 1,**

A 47 YO ♀ presents complaining of severe right-sided headache. Her right eye is painful, red, and watery. She also has intermittent blurred vision and sees **coloured halos**. ± Hard globe

✓ The likely Dx → **Acute Angle Closure Glaucoma** “Narrow Angle Glaucoma”.

✓ The next step → **Measure intra-ocular pressure using tonometry**.

◆ Do not get tricked thinking that this is a case of cluster headache. Even though the presentation is similar, cluster headache does not present with halos around lights. Also, cluster headache would have a Hx of recurrent attacks.



## Example 2,

After being in a dark room watching a movie with her friends, a girl has been brought to the ED complaining of sudden severe right eye pain and redness + nausea and vomiting. She has Hx of blurred vision and recurrent episodes of headaches. Her pupil is fixed, dilated, ovoid.

✓ The likely Dx → **Acute angle closure glaucoma** “Narrow angle glaucoma”.

✓ The likely visual symptom → **Coloured Halos**.

✓ The next step → **Ocular tonometry** “to measure IOP”.

✓ The likely affected structure → **Anterior chamber**.

✓ Rx options

→ **Pilocarpine** drops, **Timolol** drops, IV **Acetazolamide**, **Prednisolone**.

Note: Timolol maleate eye drops are one of the treatment options of AACG. They are  $\beta$ -blockers, so it should be cautioned in asthmatic patients.

## Example 3,

■ Unilateral severe painful, red, watery eye, headache  $\pm$  hard globe  $\pm$  sees halos  $\pm$  blurring of vision

→ **Narrow angle glaucoma** → **Pilocarpine eye drops** “one of the lines of Rx”.

**Example 4,**

A 47-year-old man had received tropicamide eye for routine eye examination and then developed acute eye pain and blurry vision in the right eye. Examinations reveal a mid-dilated pupil, conjunctival injection, and a shallow anterior chamber in the right eye. What is the most appropriate initial management?

- A) Latanoprost.
- B) Atropine sulfate.
- C) Timolol maleate.
- D) Cyclopentolate hydrochloride.
- E) Reassure.

**Answer → C.**

- Acute eye pain and blurry vision, mid-dilated pupil, conjunctival injection, and a shallow anterior chamber → **Acute angle closure glaucoma (AACG)**.
- **Tropicamide** is a mydriatic agent (dilates the pupil) → precipitates and worsens AACG.
- Rx options of AACG → **Pilocarpine** drops, **Timolol** drops, IV **Acetazolamide**, **Prednisolone**.

**This is an example to help you differentiate it from cluster H.**

While he is working at his office, a 31 YO ♂ suddenly developed excruciating headache to his left side associated with left eye pain. He **experienced similar episodes 3 months ago**. His left eye is red, swollen and with lacrimation.

The likely Dx → **Cluster headache**.

## The Management

☐ **Management (Acute phase):**

✓ **100% O2 for 10-20 minutes.**

✓ **Sumatriptan** (Nasal or Subcutaneous).

✓ If first time attack → refer to specialist as it may require CT to R/O other DDs.

☐ **Prophylaxis:** → **Calcium Channel Blockers** (e.g. **Verapamil**)

Excruciating = very severe, eye pain swelling redness and with lacrimation are features of cluster headache. The Hx of similar attacks is also important. Always same side.

	<b>Acute Iritis (Anterior Uveitis)</b>	<b>Acute Angle Closure Glaucoma (AACG)</b>
<b>Photophobia</b>	<b>Marked</b>	Mild

<b>Anterior chamber</b>	Cells and Flares "Hypopyon"	✓ Shallow anterior chamber ✓ Hard globe on palpation
<b>Pupil</b>	<b>Irregular</b> "distorted", constricted, sluggish to react	<b>Fixed, non-reacting, semi-dilated, ovoid.</b> Pupil could also be abnormal in shape.
<b>Intra-ocular pressure (IOP)</b>	Variable	High
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<b>Rx</b>	♦ <u>Cyclopentolate</u> , ♦ <b>Atropine</b> , ♦ <b>Prednisolone</b>	♦ <u>Pilocarpine</u> drops ✓ ♦ <u>Timolol</u> maleate drops ✓ ♦ <b>IV Acetazolamide</b> ♦ <b>beta-blockers, steroids, analgesics, antiemetics</b> ♦ <b>Peripheral iridotomy (PI)</b>

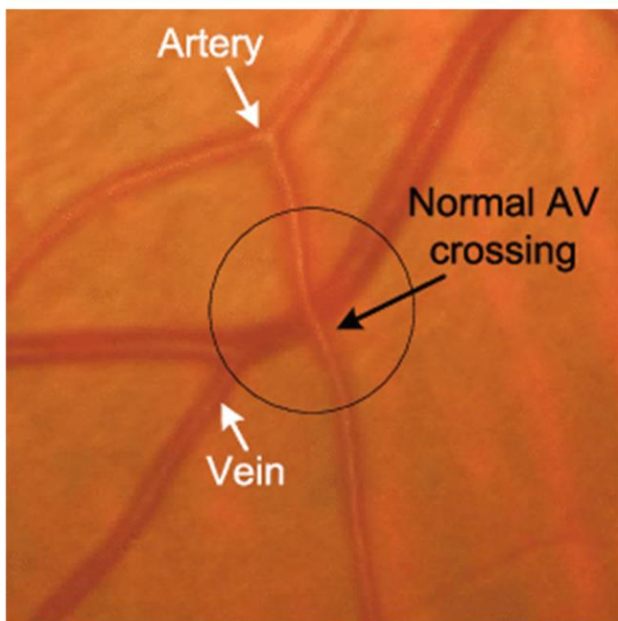
Key 3 On fundoscopy of **Hypertensive Retinopathy**, besides macular edema, hard exudates, dots, and blots, one or more of the following would be a clincher:

**Arteriovenous nipping/ Copper or silver wiring/ Flamed shaped hemorrhage**

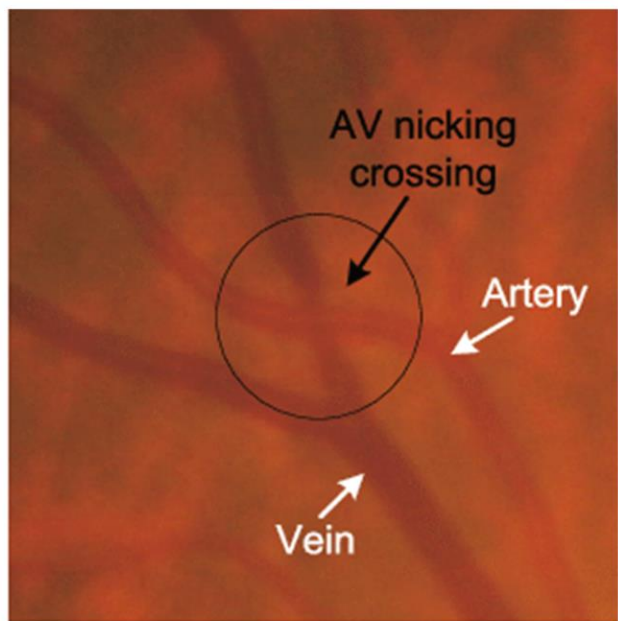
Management → **Control HTN.**

**Note**, the Hx of uncontrolled HTN (> 140/90) + dots and blots, ischemic changes, hard exudates → **Hypertensive retinopathy**. The above clinchers may not always be given.

Arteriovenous nicking, also known as **AV nipping**, is the phenomenon where, on examination of the eye, a small artery (arteriole) is seen crossing a small vein (venule), which results in the compression of the vein with bulging on either side of the crossing. It is seen in **Hypertensive Retinopathy**.



(a)



(b)

Key  
4

## Optic neuritis

Remember its association with **Multiple Sclerosis**.

✓ **Swollen, Pale** optic disc.

✓ **eye pain** especially on eye movement

✓ **Reduced vision**.

✓ Reduced colour vision (initially **red colour vision loss**).

✓ Sometimes, Hx of remitting and relapsing of symptoms would be given beside muscle weakness, exaggerated reflexes.

◆ The affected structure is → **Optic Nerve**.

◆ Management → **Corticosteroids**

■ **Remember, the management of Multiple Sclerosis**

✓ **In acute cases** (during a Relapse) (initial) → Oral or IV **Methylprednisolone**.

✓ Long-term → **Glatiramer acetate** [or] **Interferon-beta**.

Key  
5

## ■ Central retinal artery occlusion (CRAO)

✓ **Sudden** (over seconds), **painless**, unilateral loss of vision, no eye redness.

✓ **Pale or white retina** ■ **Cherry red spots at macula** ■ **Vessels attenuation**.

- **Central retinal artery** is a branch of the **Ophthalmic artery** which is a branch of the **Internal carotid artery**.

✓ If a patient presents within 100 minutes of the symptoms

→ **Firm ocular massage** may be performed as a trial to dislodge the occlusion.

→ Then, **Refer**

### **Important,**

Central Retinal Artery Occlusion may be associated with **Giant Cell Arteritis** (**Temporal Arteritis**). It may be given as a hint by mentioning that the patient complains of **unilateral headaches** and **pain** especially **on chewing**.

**Central Retinal Vein Occlusion** has a similar presentation (Sudden, painless loss of vision). HOWEVER,



✓ “Central retinal **ARTERY** occlusion”, the retina is Pale and the macula shows **Cherry red spots ± Attenuation of vessels**.

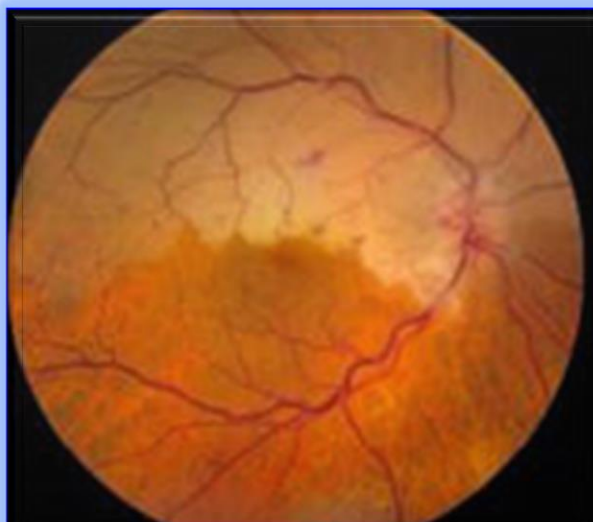
✓ “Central retinal **VEIN** occlusion”, the retina is haemorrhagic “often flame-shaped scattered hemorrhages” and the macula is swollen “oedematous”.

■ Sudden painless loss of vision + Pale retina + Cherry red macula ± Vessels attenuation

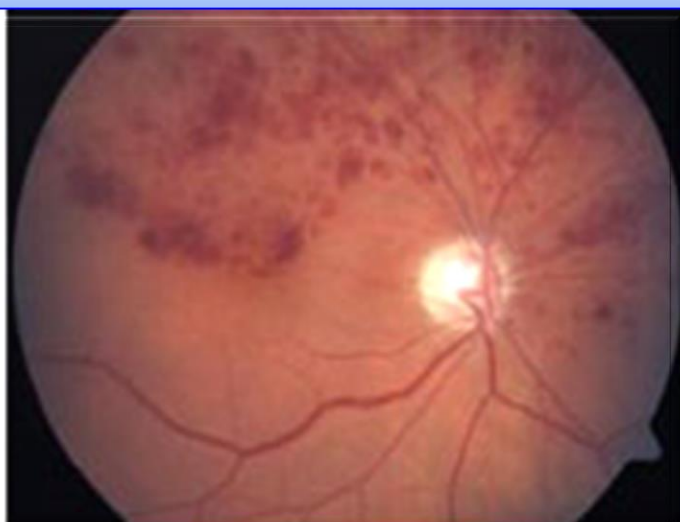
→ CRAO “**Central Retinal Artery Occlusion**”.

■ Sudden painless loss of vision + Optic disc and macular edema “swelling” + retinal hemorrhage (flame-shaped) ± engorged, tortuous veins

→ CRVO “**Central Retinal Vein Occlusion**”.



Retinal Artery  
Occlusion



Retinal Vein  
Occlusion

## Key 6 Important Hints towards [Cataract]

- ♣ High **Myopia** → a risk factor.
- ♣ Long-term **Oral Steroid** intake (e.g. **Asthma**, **COPD**, **RA**) with progressive loss of vision/ **DM**. (Risk Factors).
- ♣ **Glare** at night → Lights appear brighter than usual.
- ♣ **Dazzling (halos)** around lights.
- ♣ **Frequent change spectacles** (glasses) = refraction changes (lens problem).
- ♣ Exposure to significant amounts of **ultra violet light** (with no glasses wearing).
- ♣ **Eye trauma** can also cause cataract.

♣ On fundoscopy → “**Dense opacities** = lens has become cloudy; thus, affecting the vision”.





### Example,

A 49 YO asthmatic patient presents with left eye reduced vision and glare especially at night.

✓ The likely Dx → **Steroid Induced Cataract**.

✓ The likely cause → long-term **“Oral” Steroid** intake for asthma. (not inhaled)!

Key  
7

Parameter	Bacterial conjunctivitis	Iritis	Keratitis	Acute-closure glaucoma
				
Vision	Normal	Blurred	Blurred	Marked blurring
Pain	None	Moderate	Severe	Severe
Photophobia	None	Moderate	Moderate	Moderate
Discharge	Purulent with crusting	None	None to some	None
Injection	Diffuse, spares limbus	Perilimbic	Perilimbic	Diffuse
Appearance of cornea	Clear	Clear	Clear to cloudy	Cloudy
Pupil size	Normal	Constricted	Normal	Dilated
Intraocular pressure	Normal	Normal or low	Normal	Elevated

Key  
8**Viral conjunctivitis**

- ◆ **Redness, no pain**, no discharge (or if present, it is **watery** -serous-), no vision impairment.
- ◆ Commonly occurred due to **URTI**.
- ◆ The commonest causative organism → **Adenovirus**.
- ◆ Rx → **Reassure** + Supportive (e.g., artificial tears).

**Bacterial conjunctivitis**

- ◆ **Purulent** discharge, grittiness “sand” sensation.
- ◆ Eyes may be **‘stuck together’** in the morning.
- ◆ ± Hx Otitis media
- ◆ **Rx** →
- ✓ **Initial** → Self-care, Clean discharge using cotton wool soaked in water.
- ✓ **Severe/ Prolonged (> 1week)?** Topical antibiotics drops (e.g., *Chloramphenicol* “first-line”, Fusidic acid).

**Viral conjunctivitis**

- **Serous** “watery” discharge
- **Recent URTI**
- ± Preauricular lymph nodes
- **Rx** → **Reassurance** + Supportive management

## Allergic Conjunctivitis

♠ **Bilateral Redness + Itching + Chemosis** (swelling of conjunctiva ± eyelids).

♠ Hx of **atopy** or **seasonal** (due to *pollen*) or perennial (due to *dust mite*, washing powder or other allergens)

♠ **Rx** → **Topical anti-histamines** (first-line)



Key  
9

## **A Quick Ophthalmology Collection**

▣ Dots, blots, hard exudates in DM 1 patient. (maybe + Hx of HTN to trick you).

→ **non-proliferative “background” retinopathy.**

▣ Dots, blots, hard exudates + cotton wool spots in DM 1 patient.

→ **Pre-proliferative retinopathy.**

■ The above + **neovascularisation** “new vessels” in DM 1 patient. (maybe + Hx of HTN to trick you to choose HTN retinopathy)

→ **Proliferative retinopathy** (**Laser photocoagulation** is required).

■ Hx of **uncontrolled HTN** + any of: dots, blots, exudates, ischemic changes, macular edema ± **Arteriovenous nipping/ Copper or silver wiring/ Flamed shaped hemorrhage**

→ **Hypertensive retinopathy**.

■ Sudden painless loss of vision + **Pale retina** + **Cherry red macula** + **Vessels attenuation** (maybe + Hx of HTN to trick you to choose HTN retinopathy)

→ CRAO “**Central Retinal Artery Occlusion**” → (**Firm Ocular Massage**)

■ Sudden painless loss of vision + **Optic disc and macular edema “swelling”** + **retinal hemorrhages (flame-shaped)** + **engorged, tortuous veins** (maybe + Hx of HTN to trick you to choose HTN retinopathy)

→ CRVO “**Central Retinal Vein Occlusion**”.

■ Sudden, painless, “**transient**” loss of vision ± a curtain falling down his vision

→ **Amaurosis Fugax**. (Transient occlusion of the **central retinal artery**).

■ Sudden painless loss of vision + a curtain “black shadow” falling down his vision ± grey opaque retina that balloons forwards ± RFs (e.g. Myopia).

± **Fs: Floaters – Flashes – Field visual loss**

→ **Retinal Detachment** → Rx: **Scleral Buckling**.

▣ Night blindness (difficulty driving, tripping) + Peripheral visual loss + Hereditary

→ **Retinitis Pigmentosa** → **Routine ophthalmologist referral**

▣ HIV positive (homosexual, weight loss) + progressive visual deterioration ± retinal hemorrhages and yellow exudates.

→ **CMV retinitis**.

▣ Long term steroid intake (**oral** steroids e.g. in asthma, COPD), Glare at night, Dazzling “halos” around lights. Others: exposure to UV light excessively without wearing glasses/ frequently changing spectacles/ high myopia, trauma to eye

→ **Cataract**. The cause if he is asthmatic or has COPD → **Oral Corticosteroids**.

▣ A child presents with periorbital redness and edema + Proptosis + Ptosis + Restricted painful eye movement ± systemic (e.g. Nausea).

→ **Orbital Cellulitis** → **Admit and administer IV antibiotics**.

Key  
10

▣ **Herpes Zoster Ophthalmicus. ✓**

✓ Reactivation of Varicella Zoster Virus (VZV) in the **Ophthalmic branch** of the **Trigeminal** nerve (5<sup>th</sup> CN).



✓ Conjunctivitis, Keratitis, **pain around an eye, painful Vesicles/ Rash around an eye** ...etc.

✓ Rx → Aciclovir.

☐ Careful, the affected nerve → **Trigeminal Nerve** “the ophthalmic branch”.

### Note,

♣ Keratitis can be a complication of **Herpes Zoster** Ophthalmicus.

♣ Keratitis can also be due to **Herpes Simplex Keratitis** (**dendritic corneal ulcer**), for which, **Topic Aciclovir** is used.

Key  
11

## Retinitis Pigmentosa

☐ It is **inherited**.

☐ It primarily affects the peripheral retina resulting in tunnel vision.

### ☐ Features

✓ **Night blindness** is often the initial sign

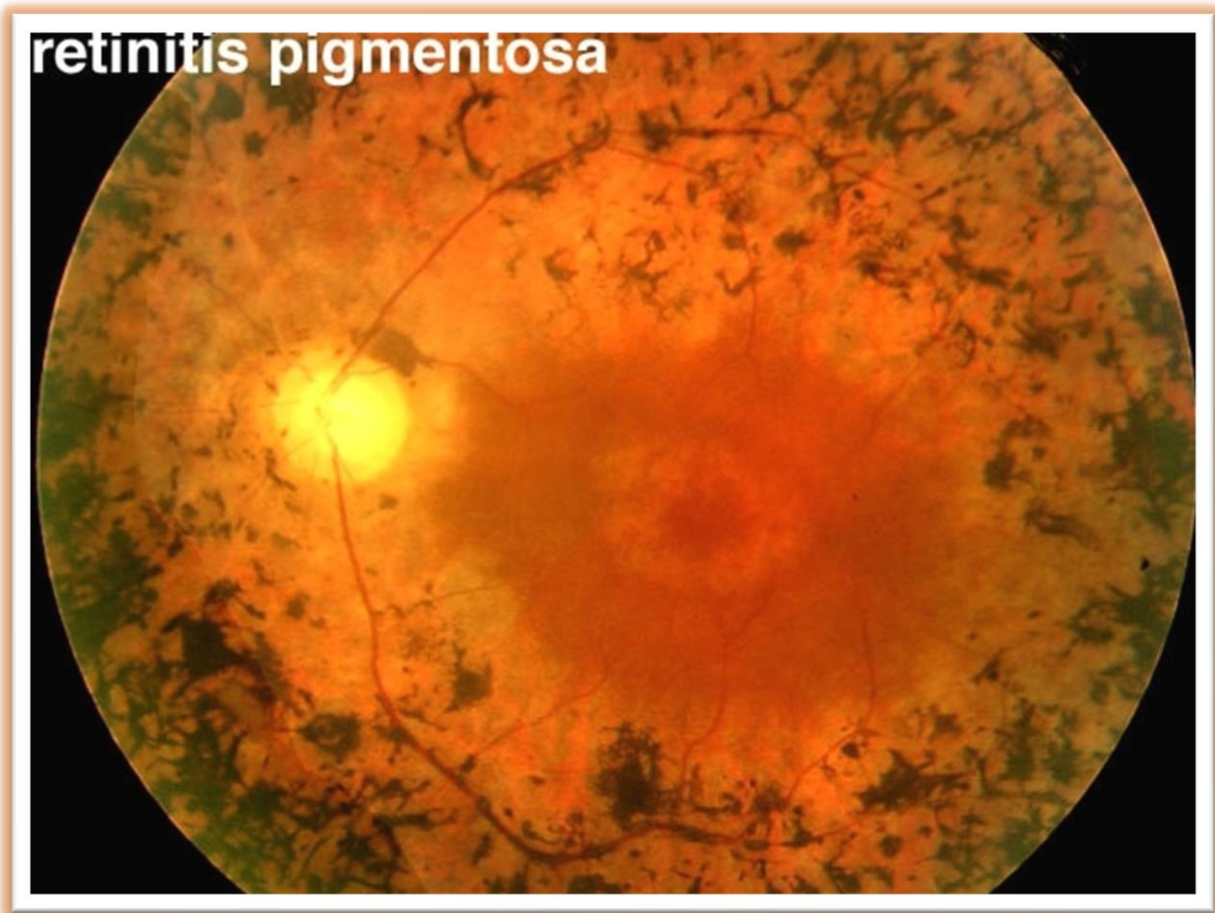
✓ **Tunnel vision** due to loss of the peripheral retina (occasionally referred to as tunnel vision)



✓ It is progressive, meaning that it will end up with central blindness.

☐ Fundoscopy: black bone spicule-shaped pigmentation in the peripheral retina, mottling of the retinal pigment epithelium.

→ **Routine ophthalmologist referral**



## Hints,

**Family Hx, gradual loss of “peripheral” vision, especially at night, Difficult night driving, tripping “stumbling” at night.**

Key 12 **Papilloedema** → **Optic disc swelling** that is caused by increased intracranial pressure. It is almost always bilateral.

**Some important causes:**

- ✓ Space-occupying lesions (hematoma, tumour, abscess).
- ✓ Malignant hypertension.

◆ The first sign is usually → **venous engorgement**.



Papilloedema on fundoscopy (**venous engorgement**).

■ So, if a patient was found to have papilledema on fundoscopy, the affected part is → **Optic Disc**. ✓

☐ Remember, in **Optic neuritis** where fundoscopy would show a swollen pale optic disc with painful eye especially on movement  $\pm$  reduced colour vision especially for Red  $\pm$  features of MS, the affected part is

→ **Optic nerve.** ✓

Key  
13

## Retinal detachment

### ☐ Hints:

✓ Sudden painless loss of vision.

✓ Floaters – Flashes – Field visual loss – Fall in visual acuity → Retinal Detachment.

✓ “A curtain falling down” or “Dark shadow over my vision”.

☐ Important **Risk factors** may be given

→ **Myopia** ■ **Extraction of cataracts** surgically ■ Hx of trauma a few days earlier.

### ☐ Direct ophthalmoscope

→ Grey, Opalescent “**Opaque**” retina, **Ballooning** forward. However, optic disc may appear normal.

### ☐ Management:

✓ Head to be tilted backward.

✓ Surgical or mechanical reattachment (eg, photocoagulation, cryotherapy, injection of expansile gas into the vitreal cavity).

✓ **Scleral buckling** (belt around the sclera) “important ✓”

## Important Note,

**Amaurosis Fugax** may present similarly “*painless unilateral loss of vision with a sensation that a black curtain has come down over my vision*”.

However, Amaurosis Fugax is “transient”; usually resolves in 5-30 minutes.

It is due to temporary retinal ischemia “transient occlusion of the central retinal artery”.

## Example 1,

A 55 YO myopic man presents with unilateral sudden painless visual loss. He says that he felt as a black curtain was coming down his vision. Ophthalmoscope reveals grey opaque retina that balloons forward.

◆ The likely Dx → **Retinal detachment**.

◆ Appropriate management → **Scleral buckling**.

## Example 2,

53 YO ♀ has floaters and flashed of light over the past 6 days in her left visual field. She has difficulty driving as she finds it difficult to see with her left eye. There is no pain or redness in her eyes and no Hx of trauma. Her visual acuity with glasses is 6/6 on the right and 6/24 on the left eye.

The likely Dx → **Retinal Detachment**.

✓ **Floaters – Flashes – Field visual loss – Fall in visual acuity** → Retinal Detachment.

✓ **RF → Myopia**

**Remember,**

◆ In Cataract → **Glare** at night | **Dazzling (halos)** around lights.

◆ In Retinitis Pigmentosa → **Night blindness** (difficulty driving, tripping at night) + **Peripheral visual loss** + **Hereditary**

**Key 14** **HIV** patient with eye/ retinal manifestations (e.g. progressive visual impairment).

→ think **Cytomegalovirus retinitis** (the causative organism is **CMV**)

◆ The question may not directly tell you that the patient is HIV positive. They may rather give you some hints towards HIV. Such common hints are → **Homosexual** ± **Weight loss**.

♦ Another hint towards CMV retinitis:

Fundoscopy → retinal hemorrhage + yellow-white areas of exudates.

### Example,

A homosexual man with weight loss presents with progressive visual impairment. His fundoscopy shows retinal hemorrhage with white-yellow areas of exudates.

♦ The likely causative organism → Cytomegalovirus.

### Refresh Your Memory

Remember that many opportunistic infections may develop in a HIV-positive patient (immunocompromised). The following are important examples:

#### **CD4 > 200 cells/mm<sup>3</sup>:**

✓ Oral thrush → Candida albicans.

✓ Shingles → Herpes zoster.

✓ Hairy leucoplakia → Epstein-Barr Virus (EBV).

✓ **Kaposi sarcoma** → HHV-8 “Human Herpes Virus 9”.

**CD4 < 200 cells/mm<sup>3</sup>:**

✓ **Pneumocystis Jirovecii** (Carinii) **pneumonia**.

✓ **Cerebral Toxoplasmosis**.

✓ **Oesophageal Candidiasis** → *Candida albicans*.

✓ **Cytomegalovirus retinitis** → CMV (especially if CD 4 < 50)

Key  
15

## Subconjunctival Hemorrhage (Bloodshot Eye)

◆ Symptomless (painless, does not affect vision).

◆ It occurs due to small bleed from a minor conjunctival vessel on the eye surface.

◆ It occurs either spontaneously (most commonly) or post-trauma, coughing, sneezing, lifting heavy stuff.



✓ Check Blood Pressure → to rule out systemic hypertension.

✓ If the patient is on anticoagulant (eg, warfarin) → Check INR.

✓ If spontaneous, no history of trauma or anticoagulation therapy

→ **Reassure**. It is usually benign and resolves spontaneously within 2 weeks.

Key  
16

■ Sudden painless loss of vision + Pale retina + Cherry red macula



→ CRAO “**Central Retinal Artery Occlusion**”.

■ Sudden painless loss of vision + Optic disc and macular edema “swelling” + retinal hemorrhage (flame-shaped) + engorged, tortuous veins

→ CRVO “**Central Retinal Vein Occlusion**”.

Key 17 Eye signs of Grave's disease, what to do? → **TFT**

(**Thyroid Function Tests** are superior to Autoantibodies as we need to establish the diagnosis of hyperthyroidism before looking for its aetiology).

### Graves disease

1. **Eye signs** – exophthalmos, ophthalmoplegia, lid lag and lid retraction
2. **Pretibial myxoedema**
3. **Thyroid acropachy**



### ◆ **Thyroid “Grave’s” Ophthalmopathy**

- ✓ Lid lag. ✓ Lid retraction. ✓ Exophthalmos. ✓ Diplopia.
- ✓ Restricted eye movements (Ophthalmoplegia).



+ Other manifestation of Grave's "Thyrotoxicosis" e.g. tachycardia, weight loss, sweating, agitation and nervousness, intolerance to hot weather...etc.

The most appropriate investigation → **Thyroid function tests** (TFT).

Careful not to mix Grave's ophthalmopathy up with **Oculomotor nerve palsy** (3<sup>rd</sup> nerve palsy) → **Diplopia, PtOsis, Mydriasis "Fixed dilated pupil", outward and downward eye deviation.**

In such a case, request → **CT angiography** (to R/O Posterior communicating artery aneurysm). Others, space-occupying lesions.

Key  
18

## Relative afferent pupillary defect (RAPD)

- ✓ Also known as the **Marcus-Gunn pupil**.
- ✓ Relative afferent pupillary defect is found by the '**swinging light test**'.
- ✓ It is caused by a lesion anterior to the optic chiasm i.e. optic nerve or retina.

### Finding

- ◆ Both the affected and the normal eye appear to dilate (instead of to constrict) when light is shone on the affected eye.

♠ **Firstly**, Light to the **intact** eye → both pupils **constrict**.

♠ **Then immediately**, Light to the **affected** eye → both pupils **appear to dilate**.

**Causes** (Lesion anterior to optic chiasm; retina, optic nerve)

♦ Retina → **Retinal detachment**

♦ Optic nerve: → **Optic neuritis** e.g. in multiple sclerosis (a commonly given hint).

**Very Important,**

**In Optic Neuritis,**

✓ Generally, and a more commonly association → **Central Scotoma**.

✓ If associated with **RAPD** “Relative afferent pupillary defect”

→ pick “**Monocular visual field loss**” instead of Central Scotoma.

**Notes,**

- Central scotoma is also seen in **Macular** degeneration.
- **Monocular** visual field loss is also seen in Amaurosis **Fugax**.
- In optic neuritis (MS), if **there is** RAPD → **Monocular visual field loss**.
- In optic neuritis (MS), if there is **No** RAPD → **Central scotoma**.

- Remember: in **pituitary adenoma** and acromegaly → **bitemporal hemianopia**.

### Important Note:

**Bitemporal hemianopia** is a type of **heteronymous hemianopia**. Heteronymous hemianopia refers to visual field defects that involve opposite halves of the visual field in each eye. Specifically:

- **Binasal hemianopia**: Loss of the nasal (inner) halves of the visual field in both eyes.
- **Bitemporal hemianopia**: Loss of the temporal (outer) halves of the visual field in both eyes, which is typically caused by compression of the optic chiasm, such as from a pituitary adenoma.

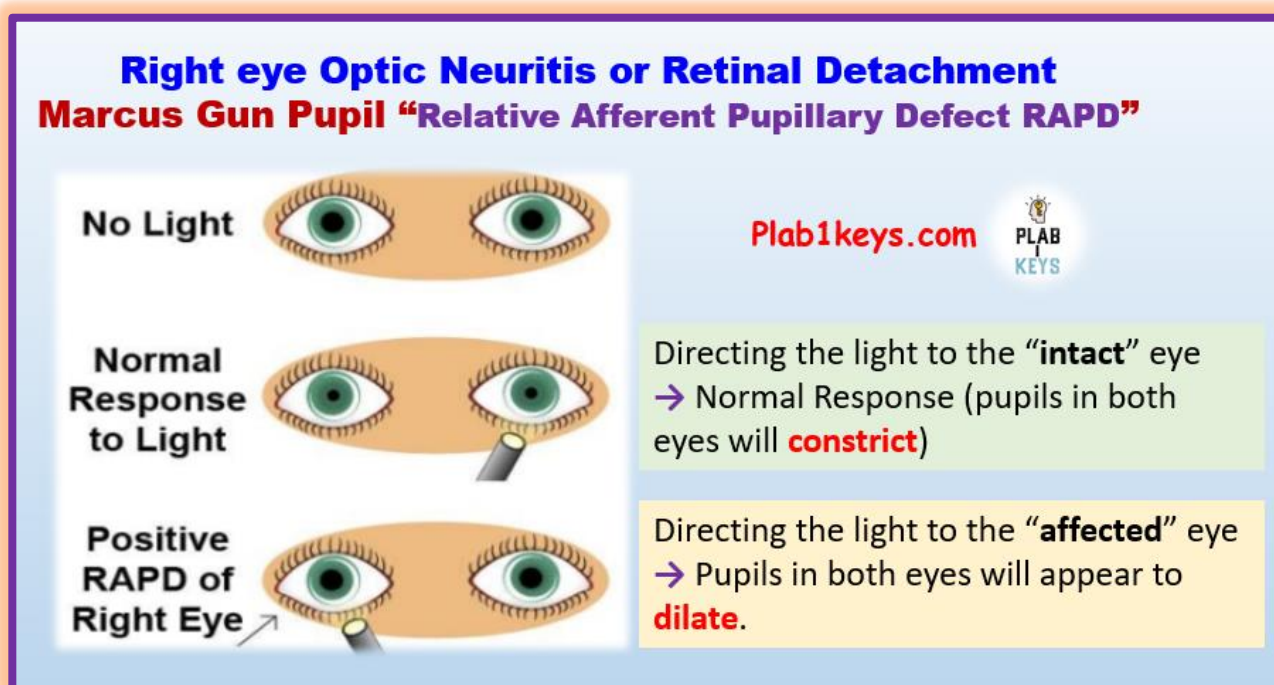
Be aware that the term "bitemporal homonymous hemianopsia" is **incorrect** and not a recognised medical term.

The correct term for the visual field defect caused by a **pituitary adenoma** is **bitemporal hemianopia**, which falls under the category of **heteronymous hemianopia**.

Therefore, if scenario mentions that the patient has pituitary adenoma, and asks about the most likely type of visual field defect, and there are 2 options: bitemporal homonymous hemianopsia and Heteronymous hemianopia, → **Heteronymous hemianopia** would be the correct answer.

This is because there is the term "bitemporal homonymous hemianopsia" is not recognised in ophthalmology and does not exist. The correct term is "bitemporal hemianopia", which is a type of Heteronymous hemianopia. So, in such an example, pick Heteronymous hemianopia.

- Acute angle closure glaucoma → **coloured halos**.



Key  
19

**Do not confuse/ mix up the management of these conditions:**

■ Dots, blots exudates + **neovascularisation** “new vessels” in DM 1 patient.  
 (maybe + Hx of HTN to trick you to choose HTN retinopathy)

→ **Proliferative retinopathy** (**Laser photocoagulation** is required).

■ Sudden painless loss of vision + **Pale retina** + **Cherry red macula** + **Vessels attenuation** (maybe + Hx of HTN to trick you to choose HTN retinopathy)

→ CRAO “**Central Retinal Artery Occlusion**” → (**Firm Ocular Massage**).

■ Sudden painless loss of vision + a curtain “black shadow” falling down his vision ± grey opaque retina that balloons forwards ± RFs (e.g. Myopia).

→ **Retinal Detachment** → Rx: **Scleral Buckling**.

■ Unilateral severe painful, red, watery eye, headache ± hard globe ± sees halos ± blurring of vision

→ **Narrow (closed) angle glaucoma**

→ **Pilocarpine eye drops** “one of the lines of Rx”

■ Itchy, dry, mildly painful eyes + Reduced lacrimation (Schirmer’s test < 10 mm)

→ **Keratoconjunctivitis Sicca**

→ Use **Artificial tears** eg, **Hypromellose drops**, **NaCl**, **Sodium hyaluronate**.

*Any of which would be a valid answer!*

Key  
20

**Acute Dacryocystitis**

An infection of the “**lacrimal sac**” (at the nasal side of the lower lid).

■ **Features**

✓ **Watering eye** (epiphora).

✓ **Swelling, pain, and erythema** at the **inner canthus** of the eye that can extend over the neighbouring areas.

✓ ± **Mucoid discharge** can be expressed from the lacrimal sac.

■ Management is with **systemic antibiotics**.

✓ Intravenous antibiotics are indicated if there is associated periorbital cellulitis.



**Acute Dacryocystitis – Left eye**

**Key 21** **A 22 YO male presents complaining of a 3-day burning, redness and stickiness of his right eye associated with greenish discharge.**

The likely part affected → **Conjunctive** “**Bacterial Conjunctivitis**”

♦ **If < 7 days** → **Self-care, including gently cleaning the discharges with cotton wool soaked in water.**

♦ **If > 7 days** → **Topical antibiotic drops eg, Chloramphenicol** “which is bacteriostatic to both gram +ve and -ve organisms. (Topical fusidic acid in pregnancy).

Key  
22

	Central Retinal Artery Occlusion (CRAO)	Branch Retinal Artery Occlusion (BRAO)
<b>Sudden painless loss of vision</b>	<b>Complete loss of vision</b>	<b>Not complete</b> ; but corresponds the area supplied by the affected branch.
<b>Fundoscopy</b>	<ul style="list-style-type: none"> <li>• <b>Pale Retina.</b> “ischemia”</li> <li>• Macula → <b>Cherry red spots</b> “as it is supplied by a different artery”.</li> <li>• <b>Attenuation of vessels.</b></li> </ul>	A <b>wedge-shaped area of pallor</b> while the rest of retina is spared.
<b>Initially</b>	Attempt <b>Firm Ocular Massage</b>	“in a trial to dislodge the occlusion”

**Remember,**

■ Sudden painless loss of vision + Optic disc and macular edema “swelling” + scattered multiple retinal hemorrhages (flame-shaped) ± engorged, tortuous veins

→ CRVO “**Central Retinal Vein Occlusion**”.

Key  
23

**Diabetic Retinopathy**, (especially seen DM 1), Fundoscopy findings:

### 1) Non-proliferative retinopathy (background retinopathy)

Dots (microaneurysms) ■ Blots (hemorrhages) ■ Hard exudates

### 2) Pre-proliferative retinopathy

The above + Cotton wool spots

### 3) Proliferative retinopathy

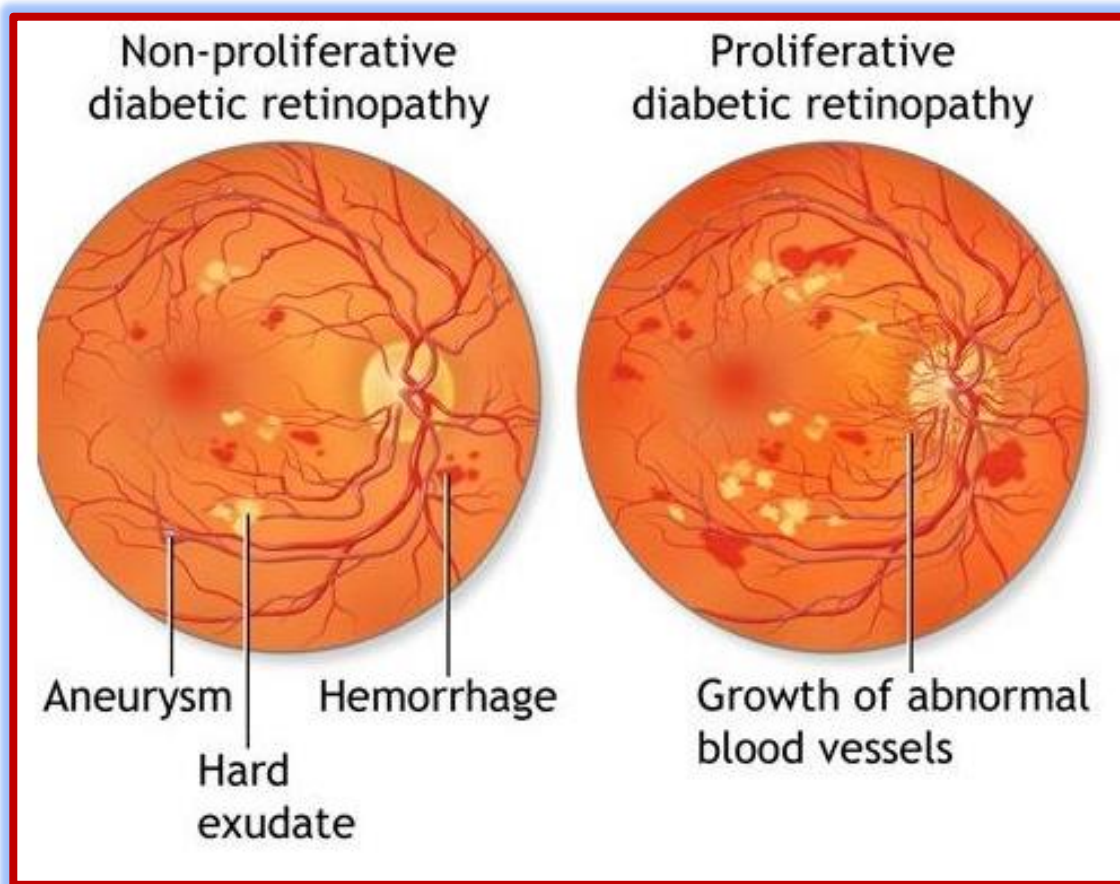
◆ The above + Neovascularisation (New vessel formation)

◆ This type requires → **Laser photocoagulation**.

◆ Progress rapidly to blindness.

◆ Floaters in vision.





The important concept to know is that once there is **neovascularisation**, it is **proliferative** retinopathy which needs → **Laser Photocoagulation**.

Key  
24

## Orbital Cellulitis

✓ Common in Children

### ■ Presentation

✓ Redness and swelling around the eye

(**Periorbital redness and edema**)

✓ Severe ocular pain



✓ Visual disturbance

✓ **Proptosis**

✓ **Ophthalmoplegia/pain with eye movements**

✓ Eyelid **oedema** and **ptosis**

✓ Drowsiness +/- Nausea/vomiting in meningeal involvement (Rare)

### ▣ **Differentiating orbital from preseptal cellulitis**

Reduced visual acuity, proptosis, ophthalmoplegia/pain with eye movements are NOT consistent with preseptal cellulitis.

▣ **Management** → **Admission to hospital for IV antibiotics**

Key  
25

Seeing **Halos** → Think **Cataract** or **Acute Angle Closure Glaucoma**.

Key  
26

**Itchy, dry**, mildly painful eyes + Reduced **lacrimation** (Schirmer's test < 10 mm)

→ **Keratoconjunctivitis Sicca**

→ Use **Artificial tears** eg, **Hypromellose drops**, **NaCl**, **Sodium hyaluronate**.

*Any of which would be a valid answer!*

Key  
27

## Important eye association!

☐ **Ankylosing spondylitis** (morning back pain and stiffness)

→ **Iritis** “the affected part is **iris**”

☐ **Rheumatoid arthritis** (morning stiffness and pain of SMALL joints)

→ **Scleritis/ episcleritis** (Acute red painful eye) “the affected part → **Sclera**”

In RA, the commonest eye association is **Keratoconjunctivitis Sicca**.

Note, as RA patients are usually on **long-term steroids**, they may also develop

→ **Steroid-induced cataract** “Look for cataract features such as **Glare at night**  
**Dazzling (halos)** around lights, Frequently changing eye glasses.

Key  
28

## Refresh Your Memory “Anatomy – Eye”

Remember **O:T:A**

<b>O (Oculomotor) 3<sup>rd</sup> CN</b>	<b>T (Trochlear) 4<sup>th</sup> CN</b>	<b>A (Abducens) 6<sup>th</sup> CN</b>
<b>Same side</b>	<b>Opposite side</b>	<b>Same side</b>
Dilated pupil, ptOsis	Diplopia on <b>Downgaze</b>	Diplopia on <b>Lateral gaze</b>

**OTA**

**O**culomotor (3<sup>rd</sup>), **T**rochlear (4<sup>th</sup>), **A**bducens (6<sup>th</sup>)

Same, Opposite, Same

Ptosis, Downward gaze, Lateral Gaze

**Key 29** Progressive ↓ in visual acuity and peripheral visual field in an elderly (>60 YO), Myopic (Short-sightedness) and with increased cup-to-disc ratio.

→ **Primary open-angle Glaucoma (POAG). Also called: Chronic Glaucoma.**

First-line treatment → **Prostaglandin analogues**, eg, latanoprost, bimatoprost.

■ **Features of open angle glaucoma:**

✓ (↓) peripheral visual field (nasal scotoma → tunnel vision).

✓ (↓) visual acuity.

✓ (↑) Intra-ocular pressure.

✓ Seeing halos around light.

✓ Optic disc cupping (ie, increased cup-to-disc ratio).

✓ Family history, Black people, Myopia, usually > 60 YO.

## ■ When to consider cataract?

- ♠ If there is a history of steroid intake (e.g. Asthma, COPD, RA).
- ♠ **Glare** at night ■ **Dazzling (halos)** around lights.
- ♠ **Frequent change of spectacles.**
- ♠ Exposure to significant amounts of **ultraviolet light.**

Key  
30

## Important Ophthalmology Collection

### ■ Cases Associated with Myopia →

- **Primary open-angle Glaucoma (POAG):** “Progressive ↓ visual acuity and peripheral field vision in elderly ± disc cupping, ↑ IOP”.

**First-line Treatment:** Prostaglandin analogues (e.g., latanoprost, bimatoprost).

- **Cataract:** “Glare, Dazzling – halos – History of long-term oral steroid use, frequently changing glasses”.

**Treatment:** Surgical lens replacement (phacoemulsification) when vision impairment affects quality of life.

- **Retinal Detachment:** “Sudden onset of floaters and flashes of light, followed by a sensation of a ‘black shadow’ or curtain falling over the vision ± grey, opaque, ballooning retina”.

**Treatment:** Surgical intervention (e.g., [scleral buckling](#), [vitrectomy](#), [laser photocoagulation](#), or [pneumatic retinopexy](#)) depending on the case.

### ☐ **Cases Associated with Hypermetropia** →

- **Acute Angle-Closure Glaucoma:** (Headache, Halos, Semi-dilated pupil, Hard globe, Corneal Oedema, ± nausea and vomiting).

**Treatment:** [Acetazolamide](#) and topical beta-blockers like [timolol](#) to quickly lower intraocular pressure. [Pilocarpine](#) is used later to open the angle. [Laser iridotomy](#) is often needed for definitive treatment.

Key  
31


**Mooren’s ulcer is NOT a degenerative corneal Disease.**

### **Some Degenerative corneal diseases:**

- ✓ Band Keratopathy.
- ✓ Keratoconus.
- ✓ Pellucid marginal degeneration.
- ✓ Terrien marginal degeneration.

Key  
32**Red eye, no pain, no sticky discharge**→ **Reassure** (likely viral conjunctivitis).Key  
33**Headache, vomiting, painful eye**→ **Acute close angle glaucoma**

	<b>Acute Iritis (Anterior Uveitis)</b>	<b>Acute Angle Closure Glaucoma (AACG)</b>
<b>Photophobia</b>	<b>Marked</b>	Mild
<b>Anterior chamber</b>	<b>Cells and Flares</b> "Hypopyon"	✓ <b>Shallow anterior chamber</b> ✓ Hard globe on palpation
<b>Pupil</b>	<b>Irregular</b> "distorted", constricted, sluggish to react	<b>Fixed, non-reacting, semi- dilated, ovoid. Pupil could also be abnormal in shape.</b>
<b>Intra-ocular pressure (IOP)</b>	Variable	High
<b>Cornea</b>	Keratitic precipitates	Oedema "Hazy, Dull, Cloudy". Coloured <b>haloes</b> .
<b>Associations</b>	Ankylosing Spondylitis Reactive Arthritis	✓ Systemic association eg, <b>Headache, Nausea</b> and <b>Vomiting.</b>

		IBD (UC, CD).	<p>✓ Hx of being in a dark room (movie theatre, ophthalmologist clinic).</p> <p>✓ Hx of tropicamide drops use (mydriatic agent).</p>
	<b>Rx</b>	<ul style="list-style-type: none"><li>◆ <u>Cyclopentolate</u>,</li><li>◆ Atropine,</li><li>◆ Prednisolone</li></ul>	<ul style="list-style-type: none"><li>◆ <u>Pilocarpine</u> drops ✓</li><li>◆ <u>Timolol</u> maleate drops ✓</li><li>◆ IV Acetazolamide</li><li>◆ beta-blockers, steroids, analgesics, antiemetics</li><li>◆ Peripheral iridotomy (PI)</li></ul>
Key 34			



	D-shaped pupil → <b>Iridodialysis</b> .
Key 35	<p>A middle age female comes complaining of sudden painless loss of vision + Floaters and Flashes with Field visual loss.</p> <p>→ <b>Retinal Detachment</b></p> <p>Rx: <b>Scleral Buckling</b>.</p>
Key 36	<p style="text-align: center;"><b>Chalazion</b></p> <p>✓ A chalazion (Meibomian cyst) is a retention cyst of the Meibomian gland.</p> <p>✓ It presents as a firm painless lump in the eyelid.</p> <p>✓ The majority of cases resolve spontaneously (conservative) but some require surgical drainage.</p> <p>✓ Initially → Conservative Rx</p> <p>e.g. → <b>Apply warm compresses to the affected eye</b>.</p> <p>✓ 4 weeks after conservative management (e.g. <b>applying warm compresses</b>) if the chalazion still present:</p>

→ **refer to an ophthalmologist** (esp. if large and symptomatic)

## Lower Eyelid Chalazion



A **chalazion (Meibomian cyst)** is a retention cyst of the Meibomian gland. It presents as a firm **painless** lump in the eyelid. The majority of cases **resolve spontaneously**.

**Applying a warm compress to the affected eye can help**

Key 37 On fundoscopy of **Hypertensive Retinopathy**, besides macular edema, hard exudates, dots and blots, one or more of the following would be a clincher:

**Arteriovenous nipping/ Copper or silver wiring/ Flame shaped hemorrhage**

Management → **Control HTN.**

**Note**, the Hx of uncontrolled HTN ( $> 140/90$ ) + dots and blots, ischemic changes, hard exudates  $\rightarrow$  **Hypertensive retinopathy**. The above clenchers may not always be given.

**Key 38** After being in a dark room watching a movie with her friends, a girl has been brought to the ED complaining of sudden severe right eye pain and redness + nausea and vomiting. She has Hx of blurred vision and recurrent episodes of headaches. Her pupil is fixed, dilated, ovoid.

✓ The likely Dx  $\rightarrow$  **Acute angle closure glaucoma** "Narrow angle glaucoma".

✓ Rx  $\rightarrow$  **Pilocarpine** eye drops, **Timolol** eye drops ( $\beta$ -blocker; cautioned in asthma), **IV acetazolamide**, steroids, anti-emetics.

Then  $\rightarrow$  urgent referral to an ophthalmologist.

✓ The likely visual symptom  $\rightarrow$  **Coloured Halos**.

✓ The next step  $\rightarrow$  **Ocular tonometry** "measure IOP".

✓ The likely affected structure  $\rightarrow$  **Anterior chamber**.

**Remember:**

	<b>Acute Iritis (Anterior Uveitis)</b>	<b>Acute Angle Closure Glaucoma (AACG)</b>
<b>Photophobia</b>	<b>Marked</b>	Mild
<b>Anterior chamber</b>	Cells and Flares "Hypopyon"	√ Shallow anterior chamber √ Hard globe on palpation
<b>Pupil</b>	<b>Irregular</b> "distorted", constricted, sluggish to react	<b>Fixed, non-reacting, semi- dilated, ovoid. Pupil could also be abnormal in shape.</b>
<b>Intra-ocular pressure (IOP)</b>	Variable	High
<b>Cornea</b>	Keratitic precipitates	Oedema "Hazy, Dull, Cloudy". Coloured <b>haloes</b> .
<b>Associations</b>	Ankylosing Spondylitis Reactive Arthritis IBD (UC, CD).	√ Systemic association eg, <b>Headache, Nausea and Vomiting.</b>  √ Hx of being in a dark room (movie theatre, ophthalmologist clinic).

	<b>Rx</b>	<ul style="list-style-type: none"><li>◆ <u>Cyclopentolate</u>,</li><li>◆ Atropine,</li><li>◆ Prednisolone</li></ul>	<ul style="list-style-type: none"><li>◆ <u>Pilocarpine</u> drops v</li><li>◆ <u>Timolol</u> maleate drops v</li><li>◆ IV <u>Acetazolamide</u></li><li>◆ beta-blockers, steroids, analgesics, antiemetics</li><li>◆ Peripheral iridotomy (PI)</li></ul>
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Key 39	<p>♣ <b>Frequent change of spectacles</b> (glasses) but always come back again for error of refraction = refraction changes (lens problem) + Myopia</p> <p>Suspect → <b>Cataract</b>.</p> <hr/> <p style="text-align: center;"><b>Important Collection</b></p> <p>☐ <b>Myopia</b> →</p> <p>♠ <b>Open angle Glaucoma</b>, “Progressive ↓ visual acuity and peripheral filed vision in an elderly ± disc cupping”</p> <p>♠ <b>Cataract</b> “Glare, Dazzling – halos-, Hx of long steroid intake, Hx of Changing glasses”,</p>
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♠ **Retinal detachment** *"Floaters and Flashes ± Curtain falling over vision"*.

▣ **Hypermetropia** →

♠ **Acute Angle Closure Glaucoma** *(Headache, Halos, pupil is semi-dilated, Hard globe, Corneal Oedema, Nausea and vomiting)*

**Key 40** A question on woman with eyes defect came back from a travel to 'Turkey' with visual acuity of 6/12 and 6/18 for L/R respectively. She is hypertensive with BP of 156/90 and also has DM type 2. Fundoscopy attached What is the diagnosis? (IMAGE BASED Q)



A. Diabetic retinopathy

B. **Hypertensive retinopathy**

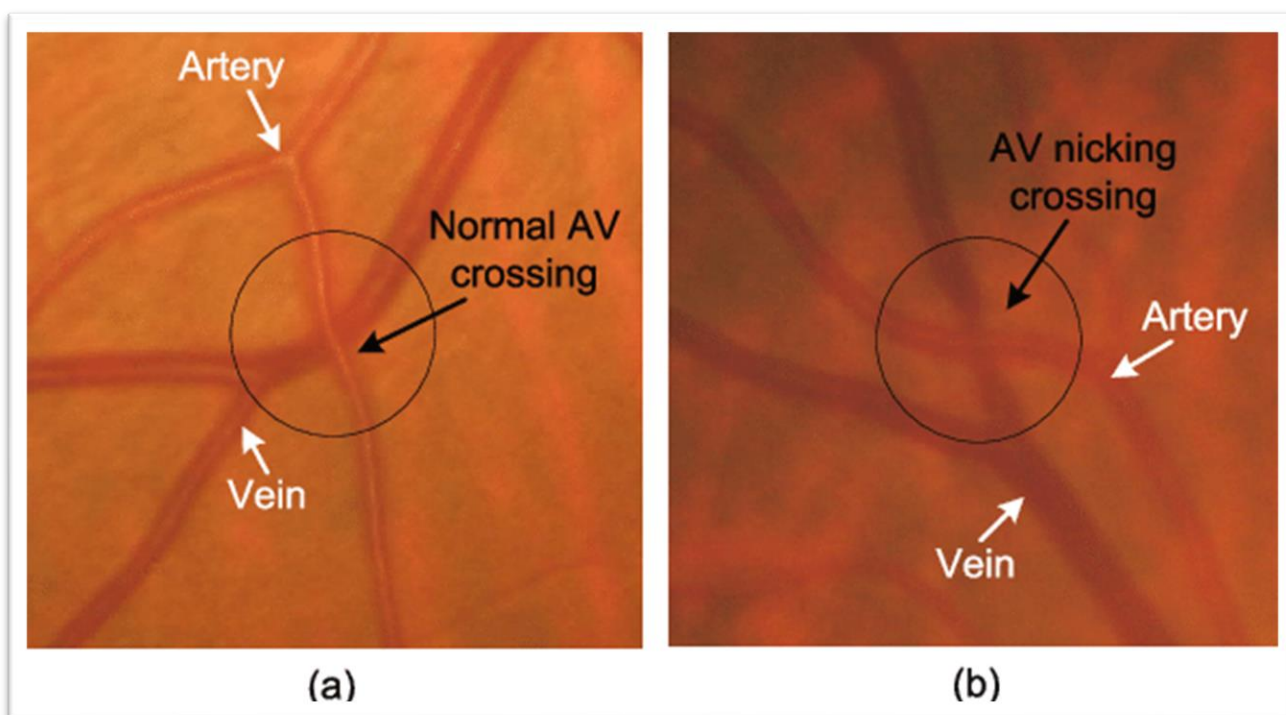
C. Retinal artery occlusion

D. glaucoma

E. retinitis pigmentosa

Arteriovenous nicking, also known as **AV nipping**, is the phenomenon where, on examination of the eye, a small artery (arteriole) is seen crossing a small vein (venule), which results in the compression of the vein with bulging on either side of the crossing. It is seen in **Hypertensive Retinopathy**.

The Hx of travel here may indicate that the patient was not following up his HTN lately.



On fundoscopy of **Hypertensive Retinopathy**, besides macular edema, hard exudates, dots and blots, one or more of the following would be a clincher:

**Arteriovenous nipping/ Copper or silver wiring/ Flamed shaped hemorrhage**

Management → **Control HTN.**

**Note**, the Hx of uncontrolled HTN (> 140/90) + dots and blots, ischemic changes, hard exudates → **Hypertensive retinopathy**. The above clinchers may not always be given.



## Also remember:

**Diabetic Retinopathy**, (especially seen DM 1), Fundoscopy findings:

### Non-proliferative retinopathy (background retinopathy)

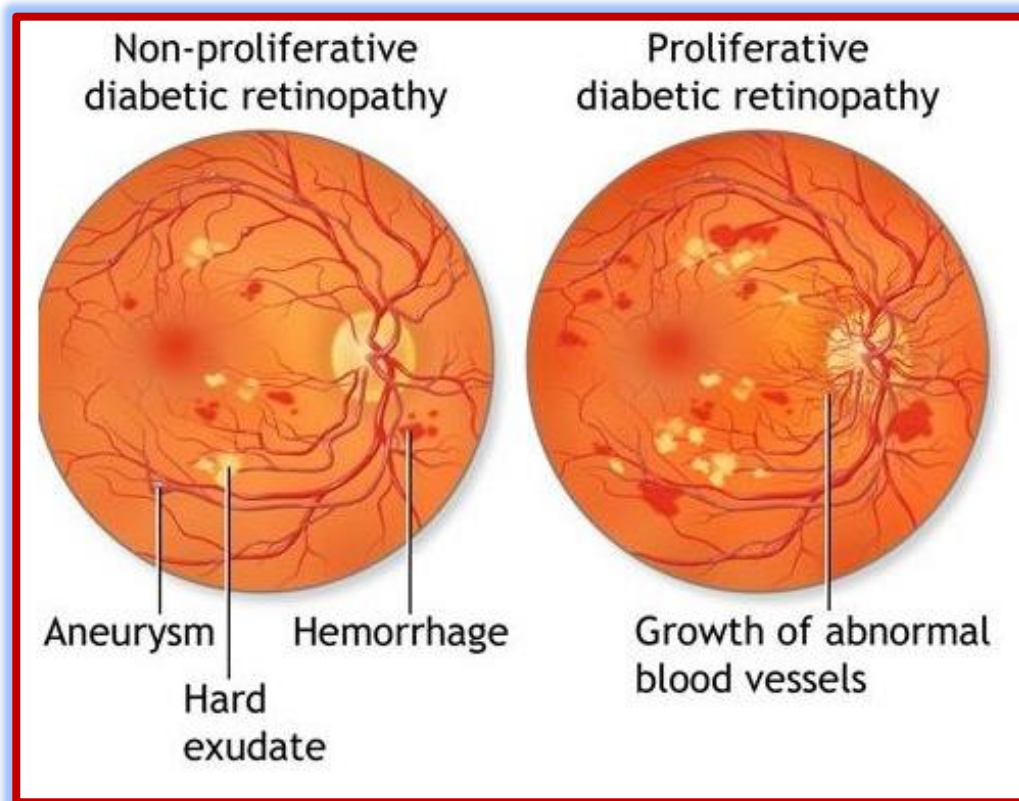
Dots (microaneurysms) ■ Blots (hemorrhages) ■ Hard exudates

### Pre-proliferative retinopathy

The above + Cotton wool spots

### Proliferative retinopathy

- ◆ The above + Neovascularisation (New vessel formation)
- ◆ This type requires → **Laser photocoagulation**.
- ◆ Progress rapidly to blindness.
- ◆ Floaters in vision.



The important concept to know is that once there is **neovascularisation**, it is **proliferative** retinopathy which needs → **Laser Photocoagulation**.

**Key 41** 30yr old having progressive painless peripheral visual loss of 6 months duration. Worse at night. Similar history in father. What to do?

- A. **Routine ophthalmologist referral**
- B. Oral prednisolone
- C high oral steroid
- D steroid eye drop

E refer to his optician

☐ Night blindness (difficulty driving, tripping) + Peripheral visual loss + **Hereditary**

→ **Retinitis Pigmentosa.**

→ **Routine ophthalmologist referral**

✓ Vitamin A may help. However, a routine referral to an ophthalmologist is to be done.

**Key 42 A patient in depression. Switched from fluoxetine to citalopram. Presents with painful right red eye with visual blurring.**

A. fusidic acid eye drop

B. Urgent referral to psychiatric

C. **Urgent referral to ophthalmology**

D. clomipramine

✓ Citalopram (a SSRI) is associated with acute angle-closure glaucoma as one of the side-effects.

✓ Untreated closure angle glaucoma can cause permanent loss of vision!

**Key 43 Painful red eye of 4 days. Sclera and Corneal junction are red with tearing. Pupil is irregular shape. Fluorescein staining is normal. Diagnosis?**

- a. Corneal ulcer
- b. Acute conjunctivitis
- c. **Anterior Uveitis**
- d. Keratitis

*Normal fluorescein stain rules out corneal ulcer and keratitis.*

	<b>Acute Iritis (Anterior Uveitis)</b>	<b>Acute Angle Closure Glaucoma (AACG)</b>
<b>Photophobia</b>	<b>Marked</b>	Mild
<b>Anterior chamber</b>	Cells and Flares "Hypopyon"	✓ Shallow anterior chamber ✓ Hard globe on palpation
<b>Pupil</b>	<b>Irregular</b> "distorted", constricted, sluggish to react	<b>Fixed, non-reacting, semi- dilated, ovoid. Pupil could also be abnormal in shape.</b>
<b>Intra-ocular pressure (IOP)</b>	Variable	High
<b>Cornea</b>	Keratic precipitates	Oedema "Hazy, Dull, Cloudy". Coloured <b>haloes</b> .
<b>Associations</b>	Ankylosing Spondylitis Reactive Arthritis	✓ Systemic association eg, <b>Headache, Nausea and Vomiting.</b>

		IBD (UC, CD).	<p>✓ Hx of being in a dark room (movie theatre, ophthalmologist clinic).</p> <p>✓ Hx of tropicamide drops use (mydriatic agent).</p>
	<b>Rx</b>	<p>♦ <u>Cyclopentolate</u>,</p> <p>♦ Atropine,</p> <p>♦ Prednisolone</p>	<p>♦ <u>Pilocarpine</u> drops ✓</p> <p>♦ <u>Timolol</u> maleate drops ✓</p> <p>♦ IV Acetazolamide</p> <p>♦ beta-blockers, steroids, analgesics, antiemetics</p> <p>♦ Peripheral iridotomy (PI)</p>
Key 45	<p><b>Patient with dry eyes. Schirmer's test shows 8mm (N &gt; 15). (+) ANA. Management?</b></p> <p>A: <u>Hypromellose</u> (an artificial tear)</p> <p>B. Timolol</p> <p>c. acetazolamide</p> <p>d. antibiotics</p>		

e. 62aryrose oil

■ Itchy, dry, mildly painful eyes + Reduced lacrimation (Schirmer's test < 10 mm)

→ **Keratoconjunctivitis Sicca**

→ Use **Artificial tears** eg, **Hypromellose drops**, **NaCl**, **Sodium hyaluronate**.

*Any of which would be a valid answer!*

## **Sjogren's syndrome**

■ Sjogren's syndrome is an autoimmune disorder affecting exocrine glands resulting in dry mucosal surfaces.

■ It may be primary (PSS) or secondary to **SLE**, rheumatoid arthritis or other connective tissue disorders

■ Sjogren's syndrome is much more common in females (ratio 9:1).

**Features "important"**

✓ **Dry eyes** → keratoconjunctivitis sicca

“The patient may have **itchy eyes**, a **sandy sensation** under their eyes -due to low lacrimal production”

◆ Schirmer’s test → ↓ tear production.

◆ Rose Bengal stain → may show Corneal ulcerations “2ry to dry eyes”.

✓ **Dry mouth**:

“They may complain of difficulty in swallowing food – due to low saliva”

✓ **Recurrent Parotitis** → **Bilateral enlargement of Parotid glands.**

✓ **Others:**

vaginal dryness, arthralgia, Raynaud’s, myalgia, sensory polyneuropathy, renal tubular acidosis (usually subclinical)

## Investigation

✓ **Schirmer’s test**: filter paper near conjunctival sac to measure tear formation  
→ decreased tear production.

✓ **Rose Bengal stain** → may show Corneal ulcerations “2ry to dry eyes”.

✓ **Rheumatoid factor** (RF) positive in nearly 100% of patients.

✓ **Anti-Ro** (SSA) antibodies in 70%.

✓ **anti-La** (SSB) antibodies in 30%.

## Management

◆ **No Cure.**

◆ Give **artificial saliva** and **tears (eg, Hypromellose drops)**.

**Key 46** A question on woman with eyes defect came back from a travel to 'Turkey' with visual acuity of 6/12 and 6/18 for L/R respectively. She is hypertensive with BP of 156/90 and also has DM type 2. Fundoscopy attached What is the diagnosis? (IMAGE BASED Q)

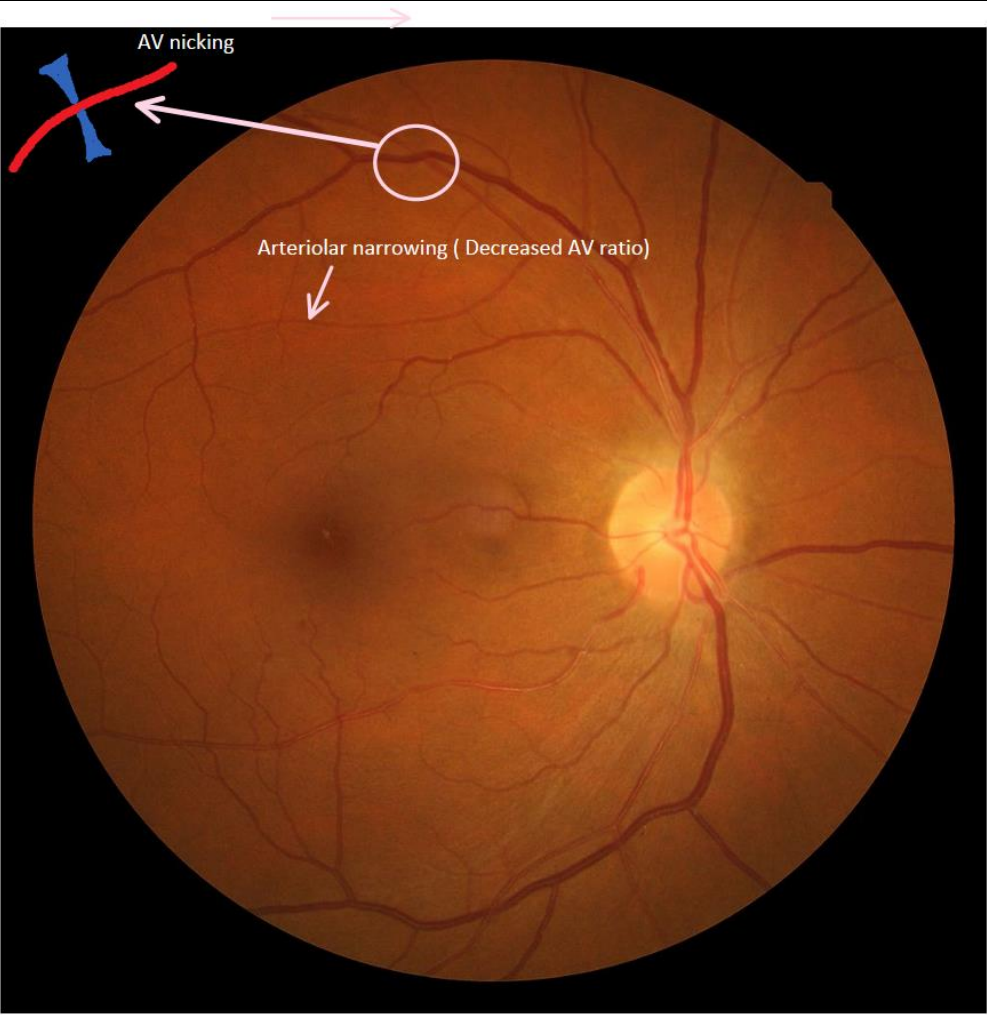


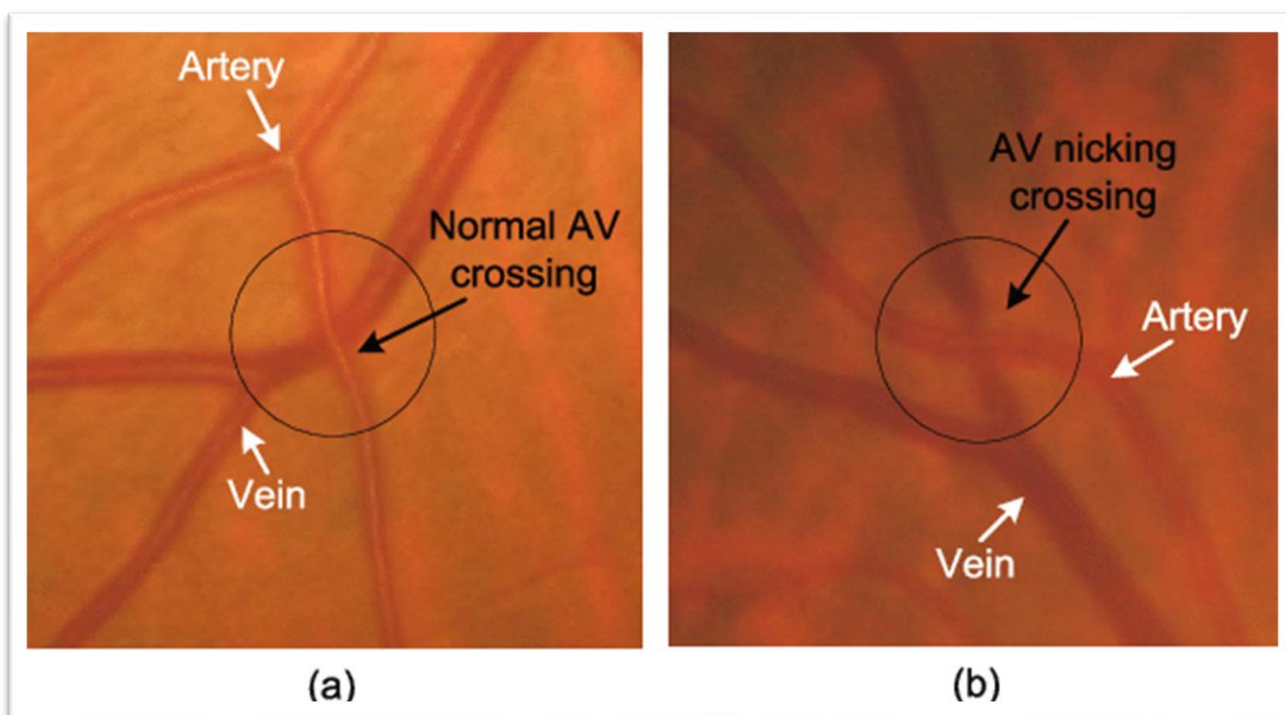


- A. Diabetic retinopathy
- B. **Hypertensive retinopathy**
- C. Retinal artery occlusion
- D. glaucoma
- E. retinitis pigmentosa

The Hx of travel here may indicate that the patient was not following up his HTN lately.

Arteriovenous nicking, also known as **AV nipping**, is the phenomenon where, on examination of the eye, a small artery (arteriole) is seen crossing a small vein (venule), which results in the compression of the vein with bulging on either side of the crossing. It is seen in **Hypertensive Retinopathy**.





On fundoscopy of **Hypertensive Retinopathy**, besides macular edema, hard exudates, dots and blots, one or more of the following would be a clincher:

**Arteriovenous nipping/ Copper or silver wiring/ Flamed shaped hemorrhage**

Management → **Control HTN.**

**Note**, the Hx of uncontrolled HTN ( $> 140/90$ ) + dots and blots, ischemic changes, hard exudates → **Hypertensive retinopathy**. The above clinchers may not always be given.

**Key 47** A 54 yr old man with left sided facial pain and painful rash extending from forehead to the left eyelid. He had complained of headache 2 weeks prior with no cause found. What is the affected structure?

- a) extra cranial Facial nerve
- b) **ophthalmic nerve**
- c) Vestibulocochlear nerve
- d) Oculomotor nerve
- e) optic nerve

**Careful!**

Ophthalmic nerve is a branch of trigeminal nerve (5<sup>th</sup> CN); not to be confused with optic nerve (2<sup>nd</sup> CN)!

### ☐ Herpes Zoster Ophthalmicus. ✓

✓ Reactivation of Varicella Zoster Virus (VZV) in the **Ophthalmic** branch of the **Trigeminal nerve (5<sup>th</sup> CN)**.

✓ Conjunctivitis, Keratitis, Painful Vesicles around the eye (unilateral facial painful rash) ...etc.

✓ Rx → **Oral Aciclovir (antiviral)** + **Corticosteroids (eg, prednisolone)**

**Also Remember this DDx:**

### ☐ Ramsay Hunt Syndrome (Herpes Zoster Oticus) ✓

✓ Reactivation of Varicella Zoster Virus (VZV) in the geniculate ganglion of the **facial nerve (7<sup>th</sup> CN)** → Facial palsy (ipsilateral facial palsy, loss of taste).

✓ **Otalgia “ear pain”** “First symptom”, Tinnitus, Vertigo, Unilateral Hearing loss, **Painful rash/ vesicles/ blisters around the ear** or on the auditory canal.

✓ **Rx** → First → **Oral Aciclovir (antiviral)** + **Corticosteroids (eg, prednisolone)**

✓ **If lasted for > 3 months**, it is called (**post-herpetic neuralgia**). If this occurs

Give → *Amitriptyline* or *Pregabalin* or *gabapentin* or *duloxetine*.

### Important Note:

Prednisolone should be started within 2 weeks of symptoms. If The rash and pain persist for **more than 2 weeks**, it is better to add on a neuropathic agent eg, **amitriptyline**, or **gabapentin** or **pregabalin** or **duloxetine**. (They would be more beneficial than prednisolone after 2 weeks of the onset of symptoms).

**So:**

Aciclovir → up to 2 weeks, add prednisolone → **> 2 weeks** and still pain → one of the following: *Amitriptyline* or *Pregabalin* or *gabapentin* or *duloxetine*.

Key  
48

## Orbital cellulitis

- Orbital cellulitis is the result of an infection affecting the fat and muscles posterior to the orbital septum, within the orbit but not involving the globe.
- It is usually caused by a spreading upper respiratory tract infection from the sinuses (esp. ethmoid) and carries a high mortality rate.
- Orbital cellulitis is a **medical emergency** requiring hospital admission and urgent senior review.
- Periorbital (preseptal) cellulitis is a less serious superficial infection anterior to the orbital septum, resulting from a superficial tissue injury (chalazion, insect bite etc...). Periorbital cellulitis can progress to orbital cellulitis.

### ▣ Epidemiology

Mean age of hospitalisation **7-12 years**.

### ▣ Risk factors

- ✓ Childhood
- ✓ Recent Hx of URTI
- ✓ Previous sinus infection
- ✓ Lack of Haemophilus influenzae type b (Hib) vaccination
- ✓ Recent eyelid infection/ insect bite on eyelid (Peri-orbital cellulitis)
- ✓ Ear or facial infection

## ■ Presentation

- ✓ Redness and swelling around the eye
- ✓ Severe ocular pain
- ✓ Visual disturbance (Not Always!).
- ✓ Proptosis
- ✓ Ophthalmoplegia (limited eye movements) /pain with eye movements
- ✓ Eyelid oedema and ptosis
- ✓ Drowsiness +/- Nausea/vomiting in meningeal involvement (Rare)

## ■ Differentiating orbital from preseptal cellulitis

reduced visual acuity, proptosis, ophthalmoplegia/pain with eye movements are NOT consistent with preseptal cellulitis

## ■ Investigations

- Full blood count – WBC elevated, raised inflammatory markers.
- Clinical examination involving complete ophthalmological assessment – Decreased vision, afferent pupillary defect, proptosis, dysmotility, oedema, erythema.
- **CT with contrast of the sinus, orbit and brain** – Inflammation of the orbital tissues deep to the septum, sinusitis, excludes abscess formation.
- Blood culture and microbiological swab to determine the organism.

Most common bacterial causes – Streptococcus, Staphylococcus aureus, Haemophilus influenzae B.



## ■ Management

- ✓ Admission to hospital for broad spectrum IV antibiotics.
- ✓ CT scan of the sinus, orbit and brain.
- ✓ May require drainage of abscess and decompression.



**Scenario:**



A 9 YO girl is brought to the ED by her mother complaining of left eye pain of 3 days that has been worsening. She also has malaise. There is no Hx of trauma. Her mother mentions that the girl had runny nose, fever and cough 10 days ago. On examination, the left eye shows redness, swelling, protrusion, restricted and painful eye movements. Her visual acuity is 6/6. Her temperature is 39. What is the most appropriate initial investigation?

→ **CT scan of the orbit, sinus and brain.**

→ Admit to hospital for broad spectrum IV antibiotics (eg, **IV ceftriaxone**).

Key  
49

A patient on TCA “Tricyclic antidepressant” e.g., clomipramine develops painful and red eye with blurry vision + nausea and headache. What should be done?

→ **Urgent referral to ophthalmology.**

One of the side effects of **TCA** (e.g., **clomipramine**) and

**SSRIs** (e.g., **citalopram**) is Acute angle closure glaucoma which needs an urgent referral to an ophthalmologist.

Key  
50

## Charles Bonnet syndrome

Charles Bonnet syndrome causes a person whose vision has started to deteriorate to see things that aren't real (visual hallucinations).

The hallucinations may be simple patterns, or detailed images of events, people or places.

They're only visual and don't involve hearing things or any other sensations.

It's important to be aware that hallucinations associated with Charles Bonnet syndrome are caused by failing eyesight. They're not caused by a mental health problem or dementia.

People with Charles Bonnet syndrome are usually aware that the visions aren't real, even if they're vivid.

Always see your GP if you're experiencing hallucinations so they can investigate the cause.

Investigations usually start with an eye examination which starts with slit-lamp examination.

## Types of hallucination

There are 2 main types of hallucination that people with Charles Bonnet syndrome tend to experience. They may see:

- simple repeated patterns
- complex images of people, objects or landscapes

Simple repeated patterns can take the form of grids, shapes or lines, which can appear in bright or vivid colours. The patterns may lay across or cover everything the person sees.

More complex hallucinations can involve people, places, animals and insects.

Most people don't see hallucinations of people they know or past events they have experienced.

The hallucinations aren't usually unpleasant or threatening, but may be slightly frightening when first experienced.

They can sometimes occur out of the blue, and can last for a few minutes or several hours.

They may be moving or static.

### Example:

A 66 YO man presents to a GP surgery complaining of seeing coloured patterns, faces and animals. He is aware that they are not real. This has started around 4 months ago. He has no auditory hallucinations. His vision has been declining rapidly over the past year. Cranial nerve examinations are normal. What is the likely diagnosis and the next step of investigations?

The likely Dx → **Charles Bonnet Syndrome (CBS).**

The next step → **Refer for a slit lamp examination.**

## Key 51 **Visual field defects**

The main points for the exam are:

- **Left** homonymous hemianopia means visual field defect to the left, i.e. Lesion of **right** optic tract.
- Homonymous quadrantanopias: PITS (Parietal-Inferior, Temporal-Superior).
- Incongruous defects = optic tract lesion; congruous defects = optic radiation lesion or occipital cortex.

A congruous defect simply means complete or symmetrical visual field loss and conversely an incongruous defect is incomplete or asymmetric.

### Homonymous hemianopia

- Incongruous defects: lesion of optic tract.
- Congruous defects: lesion of optic radiation or occipital cortex.
- Macula sparing: lesion of occipital cortex.

### Homonymous quadrantanopias

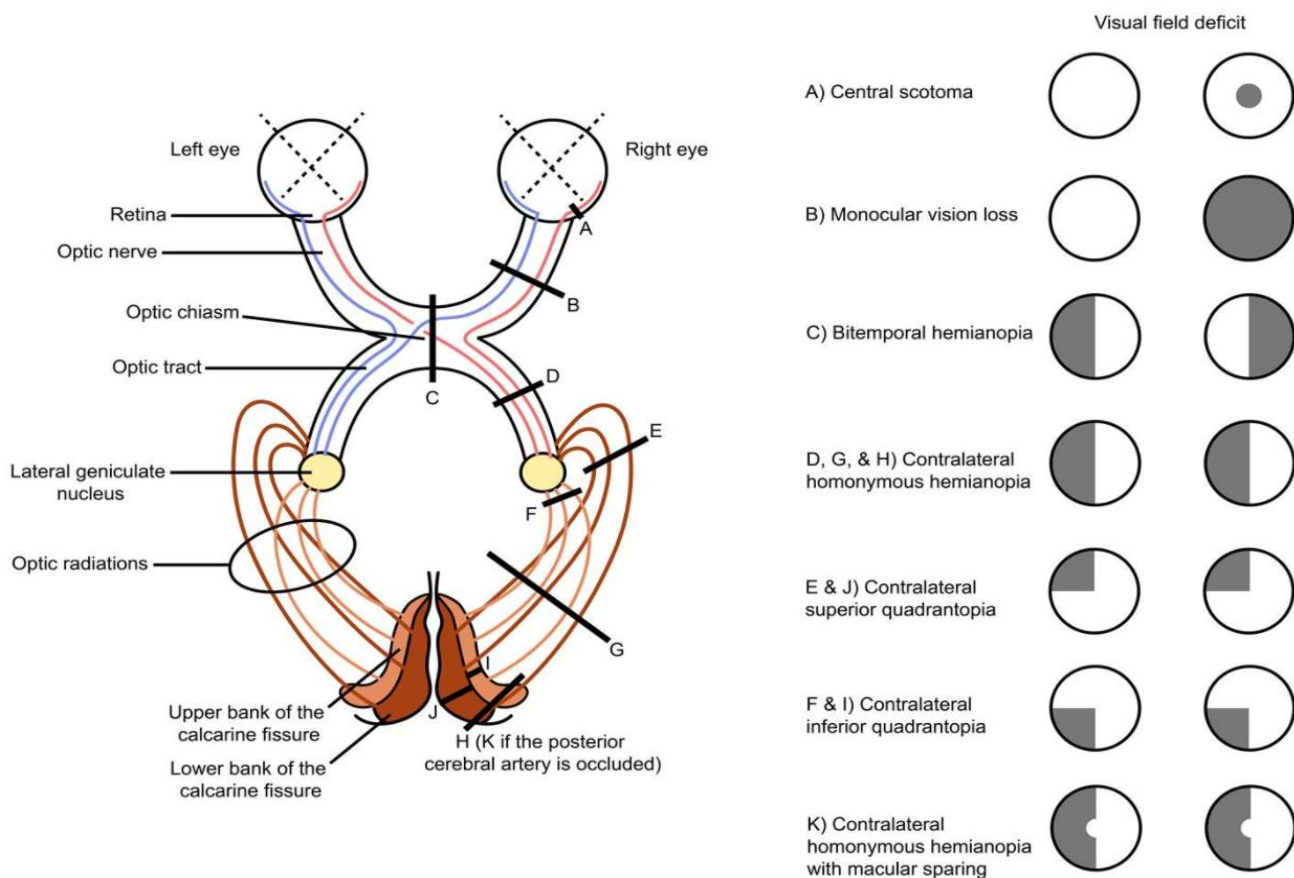
- **Superior**: lesion of the inferior optic radiations in the **temporal** lobe (Meyer's loop)
- **Inferior**: lesion of the superior optic radiations in the **parietal** lobe
- mnemonic = **PITS** (**P**arietal-**I**nferior, **T**emporal-**S**uperior).

### Bitemporal hemianopia

- Lesion of optic chiasm.
- Upper quadrant defect > lower quadrant defect = inferior chiasmal compression, commonly a pituitary tumour.

- Lower quadrant defect > upper quadrant defect = superior chiasmal compression, commonly a craniopharyngioma.

## Visual Field Defects



**Example:**

**A 40 YO woman is unable to see the cars that are coming on the left of her car. She says that her both eyes are having difficulties with left vision.**

The likely Dx → **Left homonymous hemianopsia.**

The likely affected structure → **Right optic tract.**

Key  
52

## Age-related macular degeneration (ARMD)

- Age-related macular degeneration is the most common cause of blindness in the UK.
- Degeneration of the central retina (macula) is the key feature with changes usually bilateral.
- ARMD is characterised by degeneration of retinal photoreceptors that results in the formation of drusen which can be seen on fundoscopy and retinal photography. However, the **initial investigation** is the slit-lamp microscopy that could identify any pigmentary, exudative or haemorrhagic changes affecting the retina which may identify the presence of ARMD. This is usually accompanied by colour fundus photography to provide a baseline against which changes can be identified over time.

- Age-related macular degeneration (ARMD) is one of the most common irreversible causes of visual loss in elderly persons in the developed world.

- Traditionally **two forms** of macular degeneration are seen:

- ✓ **Dry (90%** of cases, geographic atrophy) macular degeneration: characterised by **drusen** - yellow round spots in Bruch's membrane.

- ✓ **Wet (10%** of cases, exudative, neovascular) macular degeneration: characterised by choroidal **neovascularisation**. Leakage of serous fluid and blood can subsequently result in a rapid loss of vision. Carries worst prognosis.

- Recently there has been a move to a more updated classification:

- ✓ **Early** age-related macular degeneration (non-exudative, age-related maculopathy): drusen and alterations to the retinal pigment epithelium (RPE)

- ✓ **Late** age-related macular degeneration (neovascularisation, exudative)

- **Clinical Picture:**

- ✓ Mostly > 70 YO.



- ✓ Visual disturbance or loss particularly at night.
- ✓ Loss of contrast in vision.
- ✓ Difficulty in recognising faces.
- ✓ Micropsia (objects appear smaller than they are).
- ✓ Metamorphopsia (straight lines appear wavy).

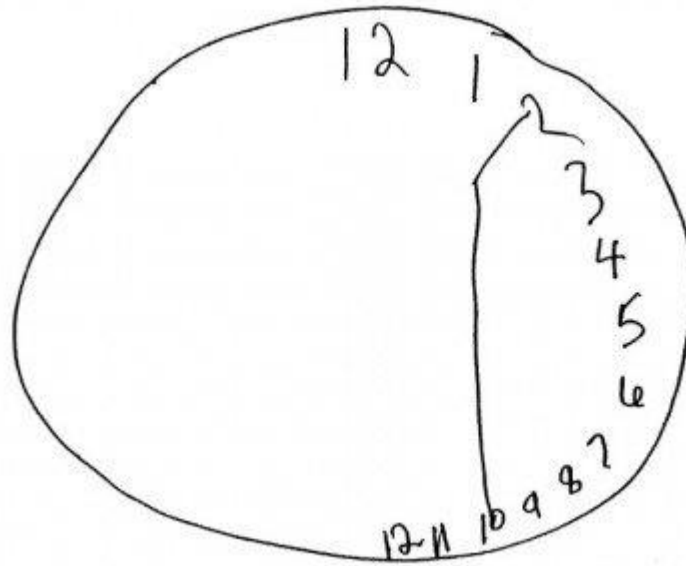
### ▣ Example:

An 82 YO man presents complaining of deterioration of his vision over the last 6 months. He has difficulties in reading and driving at night. He sees straight lines as bending. He finds the colours more dull than usual. His optician has examined his eyes and found that there are no abnormalities that can be corrected with glasses. His cornea and conjunctiva appear normal.

The likely Dx → **Age-related macular degeneration**.

<p>Key 53</p>	<p><b>Difficulty to see/ drive especially at night +</b></p> <p><b>Fundoscopy shows → fundus is obscured by dense opacities.</b></p> <p>Think → <b>Cataract</b>.</p> <p>“Dense opacities = lens has become cloudy; thus, affecting the vision”.</p>
<p>Key 54</p>	<p><b>In case of herpes zoster Ophthalmicus → <b>aciclovir</b></b></p> <p>Generally given <b>orally</b>,</p> <p>However, if the <b>tip of nose is involved</b> “+ve Hutchinson’s sign” in an immunocompromised patient “e.g., DM, or a patient with Crohn’s disease who is on immunosuppressant medications e.g., azathioprine”</p> <p>→ <b>Admit for <u>IV</u> aciclovir.</b></p> <p>Another medication to add on → <b>Prednisolone</b>.</p>
<p>Key 55</p>	<p><b>When you see “<b>dendritic ulcers</b>” on the cornea seen on <b>fluorescein dye</b></b></p> <p><b>Think → HSV keratitis “<b>Herpes simplex keratitis</b>”.</b></p> <p>Keratitis: red painful eye, blurred vision, photophobia, FB sensation in eye.</p> <p>Herpes simplex keratitis → dendritic ulcers are seen on fluorescein dye.</p>

**Key 56** After a stroke, a patient has become unaware of objects or people on one side. He is unaware of his problem. He was asked to draw a clock and this was the result:

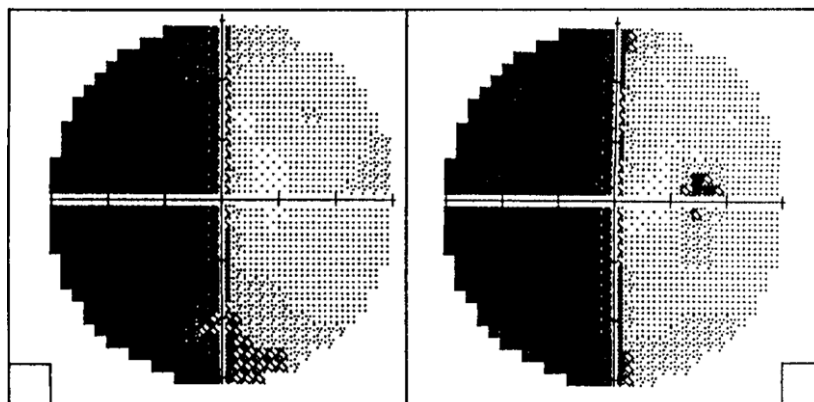


■ The likely Dx → **Hemineglect Syndrome**. (Neglect Syndromes).

■ The likely affected structure → **Parietal lobe** "important".

**Key 57** A man cannot see the objects on his left side and he is aware that his visual field is affected. When he looks to the left, he cannot see the left side "same side" in both eyes. He was diagnosed with **homonymous hemianopsia**.

■ The likely affected structure is → **Optic tract** (right optic tract in this case).



Left homonymous hemianopia (affected right optic tract)

**Key 58** A patient cannot see the objects on the outer halves in both eyes. He can only see the inner halves in both eyes.

**Dx → Bitemporal hemianopia.**

**The likely affected structure → Optic chiasm.**



Bitemporal hemianopia (affected optic chiasm)

Key  
59

## Periorbital Cellulitis = Preseptal Cellulitis.

- Acute onset of swelling, redness, tenderness, and warmth of the eyelid and the skin around the eye.
- **Fever** is often present.
- It is commonly seen in **children**.
- Rx → **Oral co-amoxiclav**. ✓



Peri-orbital cellulitis

- **Complication** → **Orbital cellulitis**.

✓ Orbital cellulitis occurs if the infection spreads to the orbital contents. There would be **orbital signs**: **painful eye movements**, **proptosis**, **gaze restriction**.

✓ Orbital cellulitis is an **emergency** which requires → **IV co-amoxiclav**.

Key  
60

**Scenario on a Previous Topic:**

A 53-year-old man presents to the urgent ophthalmology clinic complaining of painful red right eye and mild headache that started 24 hours ago. He also has nausea and vomiting. He has intermittent blurry vision with halos on his right eye. The right pupil is abnormal in shape. There is no history of trauma and the patient's medical history is insignificant. What is the most appropriate management among the following?

- A) Cyclopentolate hydrochloride eye drops.
- B) Hypromellose eye drops.
- C) Timolol maleate eye drops.
- D) Panretinal photocoagulation.
- E) Chloramphenicol eye drops.

**Answer → C.**

This is a case of acute angle closure glaucoma (acute red painful eye + systemic symptoms eg, headache, nausea, vomiting + coloured halos + abnormally shaped pupil -could be ovoid-).

**The given options:**

**A) Cyclopentolate** → used in acute anterior **uveitis** = **Iritis** = **Iridocyclitis**. Other lines in acute uveitis: atropine, prednisolone eye drops.

**B) Hypromellose eye drops** → Artificial tears (as NaCl, sodium hyaluronate). Used in **dry eye** (eg, Keratoconjunctivitis Sicca, Sjogren's syndrome).

**C) Timolol maleate eye drops**: One of the treatment lines of **acute angle closure glaucoma**. Other lines: Pilocarpine eye drops, IV acetazolamide.

**D) Panretinal photocoagulation** → used to treat diabetic **proliferative retinopathy** (**neovascularisation** "new vessels" on the retina). Photocoagulation can also be tried in the management of **retinal detachment**, but Scleral buckling is preferred.

**E) Chloramphenicol eye drops** → A topical antibiotic, can be used in **bacterial conjunctivitis** (**only** when conjunctivitis is **severe and lasts > 7 days**. Otherwise: self-care, clean discharge using cotton wool soaked in water, supportive only).

### Management of AACG includes:

- **Medical:**

✓ **Pilocarpine** eye drops (induces pupillary constriction → opens trabecular meshwork → ↑ passage -outflow- of aqueous humour → ↓ IOP).

✓ **Timolol** eye drops -β-blockers- (↓ aqueous secretion).

✓ IV **acetazolamide** (↓ aqueous secretion).

✓ Others: steroids -prednisolone- eyedrops, anti-emetics, analgesics.

✓ After stabilising the patient, **urgently refer to an ophthalmologist**.

☐ **Surgical management:**

✓ Laser **peripheral iridotomy** (PI) “Definitive”.

Key  
61

**When suspecting a cranial nerve palsy/ space-occupying lesion (Eg, a patient with diplopia, difficulty in eye abduction, headaches, blurry vision). What is the most appropriate investigation?**

→ **MRI of the head**. (Also, to rule out space-occupying lesion).

- **MRI** is better than **CT** in visualising soft tissue.
- However, **CT** is also useful and is requested if MRI is contraindicated.

☐ Space-occupying lesions (eg, Abscess, Tumour, Hematoma) can cause headaches, blurry vision, diplopia (CN palsy), papilledema, nausea and vomiting, and can also seizures.

Key  
62

### **Charles-Bonnet syndrome (CBS)**

- Charles-Bonnet syndrome is characterised by **persistent or recurrent complex hallucinations (usually visual or auditory)**, occurring in clear consciousness (ie, **the patient is aware that his hallucinations are not real**).
- This is generally associated with **visual impairment** (although visual impairment is not mandatory for a diagnosis). Insight is usually preserved.



- This must occur in the absence of any other significant neuropsychiatric disturbance.

- **Risk factors include:**

- ✓ **Advanced age.**

- ✓ Peripheral visual impairment.

- ✓ Social isolation.

- ✓ Sensory deprivation.

- ✓ Early cognitive impairment.

- Charles-Bonnet syndrome is equally distributed between sexes and does not show any familial predisposition. The most common ophthalmological conditions associated with this syndrome are **age-related macular degeneration**, followed by glaucoma and cataract.

- The investigation to aid in diagnosis

- **Optical tomography.**

Investigations start with eye examination which include slit lamp. Further investigations such as optical tomography need to be done. It may help in many eye conditions such as age-related macular degeneration, glaucoma, retinopathy.

**Scenario:**

A 68-year-old man presents complaining of visual hallucination (shapes, people, distorted figures). He is aware that his hallucinations are not real. This has been ongoing for the last 3 months. He has had a rapid decline in his vision over the last year. His cranial nerve examination is normal. Slit lamp examination of his eyes is also normal. What is the most appropriate next investigation?

→ **Optical tomography.**

**Key 63** **Retrobulbar neuritis** "Similar to optic neuritis":

- Inflammation of the optic nerve that can cause **acute sudden vision loss** and **pain on movement of the affected eye**. "The optic nerve behind the eye".
- It is often associated with multiple sclerosis (MS). That is why there is often a history of transient neurological symptoms in the same patient.
- Management → Corticosteroids.

**Key 64** **Pituitary Adenoma and Its Related Visual Field Defect**

- The pituitary gland is located near the **optic chiasm**, where the optic nerves from each eye cross. A pituitary adenoma can compress the optic chiasm, particularly affecting the decussating fibres from the nasal halves of both retinas, leading to a specific pattern of visual field loss known as

→ **Bitemporal hemianopia**. This pattern is characterised by the loss of vision in the outer (temporal) visual fields of both eyes.

### Important Note:

**Bitemporal hemianopia** is a type of **heteronymous hemianopia**. Heteronymous hemianopia refers to visual field defects that involve opposite halves of the visual field in each eye. Specifically:

- **Binasal hemianopia**: Loss of the nasal (inner) halves of the visual field in both eyes.
- **Bitemporal hemianopia**: Loss of the temporal (outer) halves of the visual field in both eyes, which is typically caused by compression of the **optic chiasm**, such as from a pituitary adenoma.

Be aware that the term "bitemporal homonymous hemianopsia" is **incorrect** and not a recognised medical term.

The correct term for the visual field defect caused by a **pituitary adenoma** is **bitemporal hemianopia**, which falls under the category of **heteronymous hemianopia**.

Therefore, if scenario mentions that the patient has **pituitary adenoma**, and asks about the most likely type of visual field defect, and there are 2 confusing options: **A) Bitemporal homonymous hemianopsia** and **B) Heteronymous hemianopia**, → **Heteronymous hemianopia** would be the correct answer.

This is because there is the term "bitemporal homonymous hemianopsia" is not recognised in ophthalmology and does not exist. The correct term is "bitemporal hemianopia", which is a type of Heteronymous hemianopia. So, in such an example, pick Heteronymous hemianopia.

Key  
65

## Visual Field Defects: Key Points for Exams (Revised)

### Left Homonymous Hemianopia:

- Visual field defect on the left side.
- Indicates a lesion in the **right optic tract**.

### Homonymous Quadrantanopias:

- **Superior Quadrantanopia**: Lesion in the inferior optic radiations (Meyer's loop) in the **temporal** lobe.
- **Inferior Quadrantanopia**: Lesion in the superior optic radiations in the **parietal** lobe.
- **Mnemonic** → **PITS** (**P**arietal-**I**nferior, **T**emporal-**S**uperior).

### Congruous vs. Incongruous Defects:

- **Congruous Defects**: Symmetrical and complete visual field loss, typically due to lesions in the optic radiation or occipital cortex.
- **Incongruous Defects**: Asymmetrical or incomplete visual field loss, typically due to lesions in the optic tract.

### Homonymous Hemianopia:

- **Incongruous Defects**: Lesion in the optic tract.
- **Congruous Defects**: Lesion in the optic radiation or occipital cortex.

- **Macula Sparing:** Lesion in the occipital cortex.

### Bitemporal Hemianopia:

- Caused by a lesion in the **optic chiasm**.
- **Upper Quadrant Defect > Lower Quadrant Defect:** Inferior chiasmal compression, commonly a **pituitary tumour**.
- **Lower Quadrant Defect > Upper Quadrant Defect:** Superior chiasmal compression, commonly a **craniopharyngioma**.

### Short Scenarios:

1. **Scenario:** A 40-year-old woman is unable to see cars coming from the left while driving, affecting both eyes.
  - **Likely Diagnosis:** **Left homonymous hemianopsia**.
  - **Likely Affected Structure:** **Right optic tract**.
2. **Scenario:** A 55-year-old man has difficulty seeing the upper left quadrant in both eyes and bumps into objects on his left side.
  - **Likely Diagnosis:** **Left superior quadrantanopia**.
  - **Likely Affected Structure:** **Right Meyer's loop (inferior optic radiations) in the temporal lobe**.

3. **Scenario:** A 30-year-old woman experiences vision loss in the outer (temporal) visual fields of both eyes, accompanied by headaches and hormonal imbalances. MRI shows a mass at the optic chiasm.
- **Likely Diagnosis:** Bitemporal hemianopia.
  - **Likely Affected Structure:** Optic chiasm, possibly due to a pituitary tumour.
4. **Scenario:** A 60-year-old man reports sudden loss of vision in the lower right quadrant of his visual field in both eyes. He has a history of hypertension and recent transient ischemic attacks.
- **Likely Diagnosis:** Right inferior quadrantanopia.
  - **Likely Affected Structure:** Left superior optic radiations in the parietal lobe.
5. **Scenario:** A 45-year-old woman complains of difficulty seeing the lower left quadrant in both eyes. She has a history of a recent head injury.
- **Likely Diagnosis:** Left inferior quadrantanopia.
  - **Likely Affected Structure:** Right superior optic radiations in the parietal lobe.
6. **Scenario:** A 50-year-old man complains of vision loss in the upper right quadrant of both eyes. He has no significant medical history.
- **Likely Diagnosis:** Right superior quadrantanopia.
  - **Likely Affected Structure:** Left Meyer's loop (inferior optic radiations) in the temporal lobe.

7. **Scenario:** A 35-year-old woman presents with headaches and visual disturbances over the past six months. An MRI reveals a 2 cm pituitary adenoma. She reports difficulty seeing objects on the outer edges of her vision in both eyes. What is the most likely type of visual field defect in this patient?

**Options:**

A) Bitemporal homonymous hemianopsia.

B) Heteronymous hemianopia.

**Answer → B) Heteronymous hemianopia.**

**Explanation:**

✓ The term "bitemporal homonymous hemianopsia" is incorrect and not recognised in medical terminology.

✓ The correct term for the visual field defect caused by a **pituitary adenoma**, which involves loss of the outer (temporal) visual fields in both eyes, is "**bitemporal hemianopia**."

✓ This falls under the category of **heteronymous hemianopia**. Therefore, the correct answer is "**heteronymous hemianopia**."

Key  
66**Chalazion VS Hordeolum**

Feature	Chalazion	Hordeolum
Cause	Blocked meibomian gland (non-infectious)	Infection of sebaceous glands (infectious)
Location	Away from eyelid margin (within eyelid)	At eyelid margin (near base of eyelashes)
Symptoms	Painless, slow-growing lump	Painful, swollen, red lump
Onset	Gradual	Rapid
Infection	Non-infectious	Infectious (often due to Staphylococcus)
Treatment	Warm compress, may resolve on its own	Warm compress, antibiotics if necessary
Other Names	Meibomian cyst	Stye

**Chalazion****Hordeolum (Stye)**



Key  
67

## Blepharitis Overview

Blepharitis is a frequent ophthalmic condition involving inflammation of the eyelids, specifically targeting the eyelid margins.

It presents with symptoms such as irritation, itching, and noticeable redness. Inflammation can be linked to various underlying causes, including bacterial infection, skin conditions (like seborrheic dermatitis), or dysfunction of the oil glands in the eyelids (meibomian gland dysfunction).

Common patient complaints include a burning sensation, grittiness, and a feeling that there is something in the eye (foreign body sensation). Physical examination may reveal swelling and redness of the eyelid margins, along with crusting at the base of the eyelashes.



**Blepharitis**

**Examination:**

The diagnosis of blepharitis is primarily clinical. It's important to closely inspect the eyelid margins and eyelashes, often aided by a slit-lamp examination for a detailed view.

**Management:**

The initial approach to managing blepharitis generally focuses on regular lid hygiene to control symptoms and reduce inflammation. First-line treatments include:

- **Warm compresses**: Applied to closed eyes for 5 to 10 minutes to help soften and remove crusting and improve gland function.
- **Lid massage**: To help express the oil glands and reduce blockage.
- **Lid cleaning (hygiene)**: Using a cotton bud dipped in diluted baby shampoo or commercially available eyelid cleansers.

**Scenario:**

A 52-year-old woman presents with chronic eye discomfort, describing a gritty, burning sensation in both eyes that worsens in the mornings. She also notes redness of her eyelid margins and crusting around her eyelashes, particularly

upon waking. Examination reveals swelling and crusting of the eyelid margins with no other significant eye findings. Her vision is unaffected.

- The most likely diagnosis → **Blepharitis**.
- Initial management → **Lid hygiene, massage + warm compresses**.

Key  
68

## Orbital Cellulitis



■ **Orbital cellulitis** is a severe infection of the soft tissues behind the orbital septum, typically caused by bacterial infections spreading from adjacent sinuses, especially the ethmoid sinus. It can arise from organisms like *Staphylococcus aureus*, *Streptococcus pneumoniae*, or *Streptococcus pyogenes*.

### 🔍 Clinical Features:

- Pain.
- Redness around the eye.
- Proptosis (bulging eye).
- Restricted eye movements.
- Periorbital swelling and erythema.
- Fever.

### 🔍 Management:

The patient needs hospital admission as prompt treatment with intravenous antibiotics is essential to prevent complications, including vision loss and intracranial extension.

**Broad-spectrum antibiotics** (e.g., IV ceftriaxone) are typically initiated.

A CT scan is often performed to rule out abscess formation, and surgical drainage may be required if an abscess is present.

*Note: IV ceftriaxone (broad spectrum) is usually given together with IV metronidazole (for anaerobic bacteria).*